## French firms to merge

TWO French companies specialising in terminal systems, Transac and Sintra, are to merge as part of a growth contract signed with the French government. At present the companies which are both part of the CGE electronics group, produce competitive systems, Transac under licence from incoterm, and Sintra from original designs.

The government growth contracts were announced last year and are granted in return for commitments on growth, employment and exports. Sintra and Transac have agreed on a growth rate of 30% a year and an expansion of exports of 50% a year over the next three years.

#### Bank gets Amdahl

THE fourth Amdahl 470V/6 in Europe is now up and running at Crédit Suisse in Zürich, where it will run loosely coupled to the bank's three IBM 370/168s.

#### £1.5m order

NATIONAL Westminster Bank has ordered 24 NCR 775/2100 multi-pocket proof and encoding systems, and 24 NCR 761 cassettes, valued at nearly £1.5 million. The systems are used in the initial processing of cheques and other documents, including coding the documents with Magnetic Ink Character Recognition, MICR, characters.

#### On the move

instance to:

IN a bid to combine most of its London staff under one roof, Univac has moved its offices to Brentfields, opposite Stonebridge Park railway station. Wembley. Its new address is: The Sperry Univac Centre, London NWIO 8LS. Tel: 01-965

**ANNOUNCEMENT** 

A Member of the Computing Services Associa-

tion is offering exclusive rights to a new iob

costing and accounting package within (a) the

The package has been designed primarily for the

Legal and Accountancy markets, but is equally

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cations facilities, who could employ the package

as standard software, also from established

Marketing Organisations / Computer Bureaux

who are seeking to extend the range of services

For fuller details, please write in the first

Box 1899 Computer Weekly

offered within their existing areas of operation.

United Kingdom and (b) Europe.

terminal systems, worth more than £100 million, point to the increasing success of Olivetti's strategy to establish itself as one of the leading suppliers of data entry and computer network equipment.

The company's turnover is now divided 40-60 between such systems and office products, and the next goal is to achieve a

This will be brought nearer by the introduction next year of a text processing system based on the Lexicon "golf ball" print mechanism, the micro floppy disc unit used in the P6060 mini, and new keyboard and memory units.

Major TC 800 orders in the pipeline and at an advanced state of development include a big network for the South African Post Office involving SP 600 minis, and about 500 TC 800s and the new TC 480

high cost

of privacy

programming of changes to sys-

tems to bring them in line with

legislation; and possible reviews

of operating systems to ensure

that they meet security criteria.

One significant point high-

ving the individual access to

lighted by the CSA is that of

nformation held on him: "A

management and clerical proc-

edure will have to be developed

to cope with this inquiry and staff trained to handle it, includ-

ing identification methods and

confirmation of data by the sub-

ject. In many cases client as well

as employee relationships could

be affected by the quality of

the CSA, shows that less than 5%

of people want to inspect data

ield on them, which means that

for a system with 100,000 perso-

nal records there could be 20

inspections and four or fewer

However, to meet the require-

corrections in a day.

The Swedish experience, says

proposed legislation aimed at

protecting personal information

are underlined in technical

guidelines drawn up by the

And the costs will not be

limited to amending computer

systems but will also be affected

by clerical changes that will be

The guidelines say, "Some of

the techniques and methods of

work which have been accepted

over the years within the organ-

isation for its computer-based

systems will have to be changed

to meet the new environment."

The changes, says the CSA, could include the introduction

of encryption technoliues to en-

sure the privacy of transmission

**CSA** shows

develop a terminal network for the Greek at Sicob in Paris. Post Office.

Giving details of Olivetti's successes in these fields, its corporate marketing manager, Massimo Samaja, said that in the first eight months of 1977 the group's consolidated turnover had been 745.9 billion lire, (£480 million) an increase of 23.9% on the same period last year. The increase in orders for the same period was

Samaja was speaking at a presentation of two key Scandinavian orders, a network 180 TC 800s for the STS, the Finnish Workers' Savings Bank; and a network of TC 480 terminals for the Norwegian State

Two major banking orders have come now had 63,000 systems in credit from the Canadian Imperial Bank of institutions worldwide, and equipment for £1,300,000, 136 are already in operation.

1,400 TC 800s, and 1,000 are to go to the extended with the TC 800 ATS automatic Commercial Bank of Italy. Olivetti is also teller system and the DF 700 data entry and supplying equipment and helping to transmission systems that were launched

> Dealing with the question of user resistance to IBM's SNA protocol, Samaja said that an SDLC working prototype was due to go live for an Australian customer by the end of the year, and a second would be installed in Italy shortly afterwards.

Work was also in hand on software to provide for TC 800 connections to the

The Finnish Saving Bank order was won in competition with Burroughs, Nokie of Finland, Datasaab and Philips. IBM dropped out at an early stage because it wanted to provide a complete package and the system was aircady well established on In the financial field, he said, Olivetti a dual Burroughs B3500 system. Of the 180 TC 800s ordered, worth a total of about

# Simples

The first division of Computer Weekly's summer soccer league was won by Jadpu, the London-based Joint Authorities Data Processing Unit of Alan Home Office and the Metropolitan Police. Its captain and top score Alan Patterson (right) is seen here receiving the cup from CW editor Malcolm Peltu at a celebration dance last week. Champions of the second division were recruitment consultants Datasceno who received the Eurologic Cup from Eurologic director Terry Wright. Altergo won the third division Wellorax trophy presented by Graham Hallett, a director of Wellorax.

# Improving 370

performance ANOTHER product aimed improving the performance of IBM 370 installations has been released in the UK by Westinghouse. Known as Fags (East Queuing System), the software was originally developed by US company Goal Systems.

Fags re-orders the queue of ments of the law, it may be 1/O requests to direct-access necessary to keep a full log on disc devices, so as to minimise disc-head movement from one request to the next.



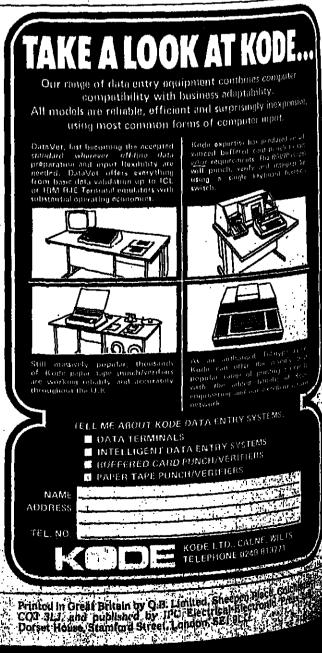
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Thursday, October 20, 1977

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# Briefing

price cuts

MANUFACTURING economies

11/60; 15% on a large 11/34; 21%

on a small 11/34; 20% for the

11/04; 16% for a large 11/03; and 18% for a small 11/03.

0kDERS for 10 3032 and 3031

systems, worth a total of £10 million, have been placed with

BM by United Leasing. The company also has two 3033s on

order and expects to place most

of the machines in Germany.

he first week of marketing of

the new machines were con-

solidated and the delivery

£10m order

FURTHER competition in the potentially lucrative Coral 65 market has come from Digital Equipment PDP-11 users.

COMPUTER &

MANAGEMENT

London, W.12

Tel: 01-743 1114 ONE OF THE

MOST PROGRESSIVE

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EDUCATION SERVICES (Software) Ltd. 21-25 Goldhawk Road

have enabled Digital Equipment to this prices by up to 21% on A Coral compiler for the machine, originally developed at the Royal Military College of Science, Shrivenham, has been eight of its packaged PDP-11 configurations, including discs and operating systems. made generally available for the The maximum price cuts of first time through Hugh Push-man Associates of Poole, Dorset. each model are - up to 20% on large 11/70 systems; 10% on the bre il/60s; 13% on the small

A new division of the company. Hugh Pushman Associates (Compilers) has been formed to market the DEC Coral and to support its existing users.

The division plans to diversity into other languages and other machines, offering source-conpartible compilers across a wide range of mini and microprocessor hardware. Next hardware to be approached will be the Computer Automation LSI-2

The Shrivenham compiler ha about 20 current users, most developers of software for the Ministry of Defence These have until now, been unsupported

#### **Modems monopoly** FOLLOWING the Post Office

sequence decided by lottery. concession that TV sets may now include integral moder *Urash crisis* for Viewdata, John McNulty of HARDWARE and software Modular Technology, has been crashes on the ICL 2980 at advised by the Post Office that the regional computing centre at Edinburgh University are still the Post Office monopoly of other modems remains in force. Preventing the centre from "Perhaps if I gave away cheap providing a full service. The Japanese TV sets with each mean time between crashes has modern, I could get round the Notened from 3.9 hours in July problem," comments McNulty. (CW July 14) to 2.9 hours. The iluation has been brought to e attention of ICL managing

#### wing special attention. Barroughs' bid

N response to IBM's 3031 Mocessor Burrough's has an-Pocessor model, the 6817, in the is, it has a minimum configuation of 2 Megabytes of main Memory and Costs \$975,000. kliveries begin noxt spring. Mahframe Challenge, Page 48.

tedor Geoffrey Cross and is

## CMC taken over

USMINIMAKER Microdata has leted negotiations to buy Norkey-to-disc manufacturer CMC UK for \$4 million, but has andoned plans to buy CMC france and CMC Germany. CMC UK has subsidiaries in feden and Denmark and Mifodata will market through distributors for the rest of

### ¢anner plan

WEST Midland Regional Health athority seems likely to aprove the purchase of a tag,000 body scanner for the authority was standed at its meeting the figure (Wednesday) to set 100,000 is being raised by the standard of the standa

20.00 is being raised by public speription. Greatest advance \*X tays, page 20.

## **Wang 2200**

& Laboratories Current indicate that the machine, Mag appearing in Europe

#### striking air traffic control assismodifications must be made. tants at West Drayton air traffic These include making the unit control centre following the use more publicly accountable and of RAF personnel last week to having staff from outside the Civil Service employed by it. However, an SCPS spokessupply fuel for the generators and air conditioning needed for man said: "If the unit is not computer and radar equipment restored within the next two weeks we will have to go ahead

Strike threat to

the first week of marketing of

at the centre. And ICL customer engineers have voted in favour of nationwide action if a meeting blic Servants, which represents with ICL management this week

the executive civil service grades, including DP staff, is proves unsuccessful (page 3). threatening industrial action in-The SCPS dispute centres around the independent body volving government computers known as the Pay Research tailess the government revives Unit, which used to compile an independent pay research statistics for use in Civil Service pay negotiations with the Another civil service union.

the Civil and Public Services It was run down in 1975 and clerical grade staff, could esca-

COINCIDING with its first full board meeting last Tuesday, the NEB's Insac software consortium announced that Systems Designers Ltd had become its fourth inember company.

Association, which represents

COMPUTERS and computer

staff are at the centre of a

number of industrial relations

problems this week, with a

threat to government computer

installations by Civil Servants

likely to be the most far reach-

The Society of Civil and Pu-

SDL has long had a close association with the government, handling in particular several projects for the Ministry purchased 26% of the company's shares for £182,000 and will provide additional loan capital of £300,000 over five years. SDL managing director Philip Swin-stead will join the Insac board. Swinstead was clearly consc-

ious that the move might lead to SDL being labelled a "lame duck" in need of government finance. He stressed that the company is healthy, but has been seeking finance from several sources for expansion.

At the Insac board meeting Alex d'Agapeyeff, chairman of CAP; Peter Adams, managing. director of SPL, and John Gow. managing director of Systime, were appointed non-executive directors of Insac together with Swinstead, David Dunbar, the NEB's divisional director for appointed insact chairman.

full straight away, and backdate it to the 17th Century." Areas that may be hit by any industrial action, which could become nationwide, are tax collection, customs and excise, and social security and indus-

trial grant payments. The strike at West Drayton has been going on for nearly two months (CW, August 25).

The centre is used as a civil and military air traffic control base and, according to the Ministry of Defence, the fuel taken in last week was vital to

and formulate a pay claim and

Adding to this, Gerry Gillman

said: "We would not shirk from

general secretary of the union.

taking industrial action. People

no industrial muscle."

should not believe that we have

be looking at as possible targets

are computers," said the SCPS

dispute with the Post Office and

called out the computer pro-

grammers in support of the pay

claim, it was later calculated

that it would have cost the Post

Office less to pay our demand in

okesman "In 1973 we had a

"One of the main areas we will

# computers and electronics was maintain computer equipment,

# COMPUTER WEEKLY'S INSIDE NEWS

#### GILB AND ANTI-GILB

## ALSO ....

#### £1,000 to aid disabled At Computer Weekly's second ennual charity ball last Friday, over 600 people from the com-They are for use at Stoke Man deville Hospital where a machine puter industry dined and denced at the Royal Lancaster Hotel, and

CW ball raises over

helped to raise well over £1,000 for the BCS Specialist Group for Quest of honour at the ball was' the BCS president, Professor Paul Samet, who accepted the contribution to the group's funds from Computer Weekly's editor, Malcolm Peltu. He also an-nounced that the National Com-puting Course had donated three ing courses to the specialis

The courses are on video

and audio tape and cover Filetab, Cobol programming and the imp-

Transport and General Workers

Union, had refused to cross the

The Civil and Public Servants

Association is now looking to

railway and road unions to cut

A series on communications

between the DP department

and users: an announcement of

a workshop on DP/user com-

munications; and the latest

week. See pages 2, 18 and 19.

or Forum are all in CW this

fuel supplies completely.

picket line.

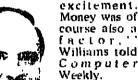
has been presented by Philips. The audio courses can be used on normal cassette recorders and the hospital could make good use of ome more units. Anyone who has a recorder or player to give or loan to Stoke Mandeville should

Left, Professor Samet chats with two members of the specialist group, Margaret Pearce and Tony Oates. On the left are Professor Samet's wife, Joan, and Christiene Higgins, wife of Tony Higgins, Computer Weekly's deputy editor, who or-genised the bell.

# Amdahi top man in UK

AFTER 17 years with IBM in the UK, latterly as the company's product management manager, Peter Williams has moved over to the competition and has been appointed managing director of Amdahl UK, and general manager, Northern European

Fuel stocks had become "un-"I accepted the post because it acceptably low" according to is a bigger job than what I was the MoD because the normal doing with IBM and offers more drivers, who are members of the



Williams told Computer Weekly. "It isu't all

that easy to leave IBM, but I think that has got an edge on the techno-

logy, and I think we will give IBM a run for its money." Ironically, Williams' last assignment was the launch of the IBM 3032 and 3031 large-

# On-Time

NEW WORLD is Citibank Financial Trust's new U.K. computer network, it's an ambitious project — a complete banking system developed from soratch to support terminals at locations throughout the country. Highly coal-effective too, using dual minicomputers rather than a

mainframe.
Data Logic has played an important part from the design stage. A team of analysts and programmers is working with Dilibank staff on implementation. One of our top consultants s managing the project.

Phase One of NEW WORLD recently began successful live operations — precisely to what Citibank themselves "elibed "an aggressive achequie"

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IRPUAL storage version of to 200 series computer has hitroduced in the US by

X-rays" is just one of the socolades given to the EMI, thosy scenner, Namey Possek explains how the system works end why the computer industry should support a special scenner appeal. Page 20 Forthright columnies Tem Gills the week comes inder-stack for his anti-mini myths, while Gilts himself provides a few useful ting on database disgnoiting programs

Ce database disgnoiting programs

Pirges 4 and 6

BRUM BEAT

Tim Palmer and Robin Wester report from Birgingham on the tits unit provides a few useful ting on database disgnoiting programs

Professor Shiu Chang Lot is Software file along a lot put of a lot of a complete in the file of the file of the second and the tits of the file of the second and the tits of the file of the second and the se

COMPUTER WEEKLY, October 20, 1977

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# Time for the DPM to communicate with users

WHEN the economic chips are down, as they are now, the DP department can no longer use the mystic aura of technology as its reason for existing. Instead, like all service organisation, it has to market, sell and prove its worth to its customers - its

Organisations with DP departments are now being asked to deliver the economic goods, to provide an efficient service which enables the organisation to increase its rvices productivity, profitability, etc at a time when it is not possible to spend lavishly on new equipment or on

increasing the work force. Technologically, the DP department is under attack from minis and micros, a situation which threatens to result in information processing anarchy.

Gone are the clear-cut days where a company's spending on computers was solely in the hands of the DP manager. Office managers are now being sold computers in the guise of word processing systems or office

minded Independently managers, tired of the costs,

to get their own micro-based system for a few thousand or public relations operation.

That is the main reason why DP managers have supported Professor Dijkstra's thesis that nicros represent a 25-year step

As the capital expenditure on hardware drops, it is enticing for non-DP managers to get their own system to give them more apparent control over their own nformation processing than if it was part of the DP department's

many-tentacled grasp.
DP people know, however, that hardware costs are the least significant element these days, and a lot of money could be spent in re-experiencing the painful software birth pains of

the modern computer industry. The only way for the DP department to fight off the dual pressures from users and technological developments that distribute computer power outside the DP ghetto, is to get out and explain and sell DP

The communication skills needed to bridge the gulf overheads and delays caused by between user and DP

may now take it into their heads same as the communications skills needed in any other selling

Unfortunately such marketing attributes are not always seen as an intrinsic part of the make-up of the good DP

This week Computer Weekly is starting a series by a specialist in the art and science of human communications, Nigel Laurle (page 19). At the end of the series. Laurie will be conducting a workshop at which these techniques can be discussed and developed in more depth (see

below). At the same time, a survey of DP managers will aim to establish the current state of communications between the DP department and users. pinpointing useful techniques

department as a result of users will be invaluable in increasing the perceived value of the DP department.

This will give the DP manager more status and more power when it comes to putting the case for the DP department to be seen as the focal point for any organisation's total information It will enable the DP manager

to argue more effectively that

pockets of mini/micro centres

production by numerical contro of parts that could not be

educed to a mathemati

ecification was demonstr

Meteorological Agency orders an Automatic Data Editing in

Switching System, ADESS

onsisting of two Datanet-3

control computers and a Tosber 5400. Weather information was to be collected and shared on an

international service wi Washington and Melboume.

planet, Robots, This, Evans su-

In fact, of course, scientific

timetables are just about as reli-

able as the average program-

ming project forecast. Both are

hopelessly optimistic at the time

of writing. And both can be

guaranteed to make less that

anticipated impact on fruition.

Given the choice, most DPMs

would plump for an early bred

third generation working en-

vironment, with its well labu-

lated problems and hazard

They would voice agreement (modulated or otherwise) that a

more practical Datafair would

● A display of guaranteed soft-

A line printer which gives a four minute warning before ruhning out of paper and does not emulate the Concorde on

However, the Datafair stands

operation between man and

ware debugging kits;

mises, will revolutionise life it

on the need for more down of earth exhibits at Unital

y Siemens... Japan'

should not be allowed to develop outside the overall control of the DP specialists. And it will, at last, bring down the barriers between users and DP people, which will improve status and cureer opportunities of DP staff and

also help to ensure the

effectiveness of DP systems.

lèn vears ago. · COMPUTER WEEKLY OCTOBER 19, 1967. THE 1906A, "a glant computer with more than twice the power of Atlas," was announced by ICT, the company's first venture into the use of integrated circuits. The largest communications network which STC had ever sold and and the circuits and the circuits of the circ No. of the last of STC had ever sold, and which STC had ever sold, and which included both the first-generation principles of Strad and the 6300 ADX system, was officially opened in London for the Royal Navy . A fimilion project which, it was predicted, could give Britain the lead in the computerised process control field was planed jointly by AEI, the Steel Company of Wales and the Ministry of Technology . A scanning technique for the production by numerical control

> meetings ledger clark makes good . . . Ronald Smith, 23, left school at 16 and became a bought ledger clark. He has just become the thousandth student to come through a course run by Control Data Institute as part of the government's Training Opportunities Schome and find a job. He is now a for ICL raines programmer at George Wimpey at Hammersmith, West Lendon.

# Training project backed by EEC

COMPUTER managers and training officers are getting her in December at a workshop funded by the F.F.C.

and aimed at improving the training of computer staff. The workshop is part of the second phase of a study into training started by the EEC three years ago (CW, October 10, 1974). That phuse, funded to be extent of £11,000, showed up a lack of communication between computer managers and their companies' training

This latest phase, with £15,200 worth of backing, will bring the two groups of people together to

# Datapoint

A REMOTE data entry and <sup>alidation</sup> system has been introduced at the bottom of the Datapoint range of distributed computing systems.

Called the 1500, the new

system can have two floppy disc drives with a total of 500,000 characters of storage, 32K bytes of random access memory and a lisplay terminal which includes programmable function

The 1500 can communicate with IBM mainframes under 3780 protocols, and interfaces Software includes Dataform

and Databus, high level languases for data entry, validation, stilling and for limited data locessing. All software is pward compatible.

Datapoint's UK distributor, niek, said that with prices ranging from £4,600 to £6,000 the 1500 was one of the most

A SIGNIFICANT UK client is on list, say reliable sources. Although ICI divisions throughout the country use a wide variety of computer equip-

ment, IBM accounts for the majority of its mainframes. installed at one division coul clearly increase the chances of

wide adoption by one of the the running.

While confirming that an UK's largest companies.

While confirming that an Burroughs, however, already evaluation of terminals is in has a foot in the door with a has a foot in the door with a 6700-based distributed system at

[CI's Pharmaceuticals division at Alderley Edge, Cheshire, and a 2700 and 3700 at the Plant. Protection division, at Haslar

# Intel 8080 at heart of Membrain ATE range

A NEW range of automatic test systems utilising a microcomputer controller has been introduced by Membrain. Based on intel 8080, the controller is the MB7710 transportable tester; the MB7750 analog attandard Ajas and Memtest; the transportable tester; the MB7750 analog attandard Ajas and Memtest; the transportable tester; the MB7750 analog attandard Ajas and Memtest; the transportable tester; the MB7750 analog attandard Ajas and Memtest; the transportable tester; the MB7750 analog attandard Ajas and Memtest; the transportable tester; the MB7750 analog attandard Ajas and Memtest; the transportable tester; the MB7750 analog attandard Ajas and Memtest; the transportable tester; the MB7750 analog attandard Ajas and Memtest; the transportable tester; the MB7750 analog attandard Ajas and Memtest; the transportable tester; the MB7750 analog attandard Ajas and Memtest; the MB7750 ana

the business computer market is

under development by Nixdorf

Like the IBM 3850, the Nixdorf

device will store 50 Megabytes

on each cassette, but there the

similarity ends (CW, October 24,

The IBM cassettes are four

inch long capsules, whereas Nixdorf is working on cassettes

similar to those used for video-

tape. Nixdorf also plans to offer

single 50 Megabyte cassettes as

a cheaper alternative to a second

The single cassette version is

likely to appear next year, and the multiple version will follow

once the stacker mechanism for

loading the cassettes has been

developed. Nixdorf envisages

stackers capable of loading

Two vital

TWO crucial meetings are due to

be held between ICL manage-

ment and union representatives

One meeting is to discuss a job

evaluation scheme for customer

engineers. ICL faces the threat

of nationwide industrial action if

The engineers have voted in

favour of possible action in pur-

suit of a scheme seeking gua-

ranteed movement between

grades, with maximum grade

salaries ranging from £4,234 for

The other meeting, which managing director Geoffrey

Cross is due to attend, will dis-

cuss a total company pay pack-

age that includes a self-

financing productivity deal that

According to ICL, technical

and administrative problems

have caused a delay in imple-

menting this scheme and first

bonuses are not expected before

ICL also claims that the

roductivity agreement cannot

be finalised until the total pay

package has been agreed

whereas union representatives

believe that productivity plans

are separate from other pay

could total over 20%.

the end of November

Grade 4 to £4,950 for Grade 1.

agreement is not reached.

this week.

Nixdorf is also working on an extended controller for disc and tape subsystems based on the Zilog Z-80 microprocessor for use with its 8870 line of business computers. It will be possible to itiate loading of a complete 50 Megabyte cassette into the disc either from the CPU or from the extended controller.

A key benefit of the extended controller is that it will enable the user to change the type of disc he uses without altering his

new processor for the 8870/1

General acquired DCC.

The company is putting a

which runs under an operating

system developed in Canada and

originally used the DCC 116

Nixdorf-Entrex key-to-disc sys-

tems. The DCC 116 mini was

designed to run Data General

Nova 1200 software and was the

subject of a lawsuit before Data

mouter also used in the

Why Heinz is backing Britain

A rosy future for the UK is predicted by Heinz Nixdorf, founder and head of Nixdorf Computer of Germany. "I am buying long-dated British Government stock (gilt-edged securities), and I believe the UK has one of the brightest futures in Europe," he said.

Speaking at the company's Paderborn headquarters last week, Herr Nixdorf went on to question the extent of the damage done by strikes in the UK.

Nixdorf plans 50 Mbyte

"How many days a year are lost in Germany through Roman Catholi holidays?" he saked. "They cost us far more in lost working time than strikes cost Britain."

Nixdorf said that had he not been born in Paderborn, he would be Nixdorf said that had he not been born in receivable, investing in the UK right now. Nevertheless, plans to build a plant in Ireland have stalled over building costs. Nixdorf has a big new plant in Paderborn and is not prepared to pay a premium of more than 10 per cent for a similar plant in Ireland. The best quote he has had so far is 60 per cent more than the £150 a square metre he paid in Paderborn.

# ICL Pascal users expect

WITH the prospect of an ICLsupported compiler on the 2900 for the structured language Pascal, interest in the language among ICL users is bound to grow. A group formed earlier this year for exchange of information and software among ICL Pascal users is anxious to harness this interest.

The Pascal Clearing House for ICL Machines is organised by David Joslin, of the University of

ventional "user group" for the 1900 and 2900 compilers, meeting to discuss developments, and circulating reports on enhancements and bugs, as well as avoiding duplication of effort in development of Pascal software.

Sussex. It aims to act as a con-

An extension of the group's activity which has just begun is negotiation with the Numerical Algorithms Group, which already produces a large library of

mass storage cassette major development effort into the 8870/1 business system, different; the company therefore

does not expect any lawsuits from Data General. Memory on the new processor will extend to 128K 16-bit words. and it will be possible for two CPUs to share all main memory and peripherals. At present the 8870/1 supports up to four workstations, but that is to be extended to 16.

Nixdorf is also using a software generator, Chico. Checklist input-customer oriented output, to customise applications in its Comet business package more cost-effect-

ively.

The customer can either answer the questions which define his requirements via a VDU on the 8870/1, or by responding to a printed questionnaire.

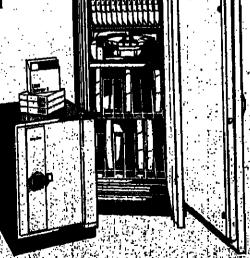
The concept of the applications software generator was explained in some detail by Bill McKeeman at the Newcastle seminar on the teaching of computer science (CW, Septem-

scientific routines in Algol 60, Algol 68 and Fortran, with view to translating the library into Pascal. This effort is being co-ordinated by David Barron o Southampton University.

The 2900 Pascal compiler is being developed for ICL by a consortium of universities, and should emerge by the middle of next year. The 1900 compiler was developed by Queen's University, Belfast.

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# DP/user workshop

IMPROVING the skills of DP management in communicating with user departments is the main blective of a workshop to be

Organised jointly by the Data Processing Management Association and Computer Weekly, the workshop will be run by Nigel Laurie, managing director of Communications

To ensure that the workshop will be of practical benefit to attonding cations Audit has prepared a survey of user which will be used as input to the

The survey will be sent shortly to all DPMA members; other Computer Weekly readers can obtain a copy of the survey form from the DPMA.

Topics to be covered at the include such as the use of booklets. house journal stories and annual user reports, as well as an overall

shortly as to which company

will operate the Info-Line

information service which is

Library, Department of

Industry, Chemical Society, IEE

**Contenders for Info-Line** 

sponsored by The British Lockheed Dialog system, was Library, Department of demonstrated to librarians in

and Derwent Publications (CW, million abstracts from technical June 16). BOC Datasolve, CRC sources around the world and

Information Systems and already has over 100 UK users.

KNIGHT PROGRAMMING SUPPORT

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department and the role of user ications in DP strategy.

group sessions in addition resentations to the ful ■ A series of articles by Lauri in Computer Weekly (see page 19) will set the scene for the

bjects to be tackled. Places at the workshop will be participant obtains maximum benefit from the day. If there is sufficient demand, further workshops will be held.

The workshop will be hold at the Holiday Inn, George Street, London W1, near Marble Arch. It costs £45 plus VAT (£40 plus VAT for DPMA members). Application forms can be stained from IPC Business .... Industrial Training, Throwley ned from IPC Business and

Way, Sutton, Surrey SM1 4QQ. Survey forms can be obtained from the DPMA, 27A York Road Maldenhead, Berkshire SL6 1SQ. Tel: 0628 29979.

Hoskyns are reported to be

Last week the US-based

information service, the

London. It offers access to 17

among the contenders.

THAT much heralded Datafair Technology Corridor proved to be remarkably short, the technology exposed being limited to a half dozen ill-assorted participants, some having only a tenuous connection with main-

stream computing. In fact the basis of selection for the Corridor could well have presented a fascinating discussion topic, replacing perhaps During the day there will be an opportunity for smaller working some of the more abstract lectures presented during the

It was not purely the delegates or visitors who were puzzled by the seemingly random representation of future technology. Those taking part seemed equally baifled. It was a widely held belief of those present that the Electronic Music Studios had got their venue (or dates) wrong. Just what relevance an electronic speech synthosiser system has for the DP industry is hard to fathom. Maybe it is felt that the DPM should modulate his voice following the discovery that the whole of the previous day's output has been lost resumably shredded. Or the disc

key-to-disc system was visiting

the manufacturers at Hounslow.

West London for a demon-

stration. Behind the scenes, the

engineering and support staff —

as often happens at demon-

stration time - were feverishly

trying to get the system on the air. But flashing error lights

vere constant reminders of their

allure. Front office was beginning to run out of ideas to dis-

tract the waiting customers

when the problem was solved As it was during the miner's

strike, office lighting was off and the demo room's blinds were

This incident occurred during a period of power cuts so the

lights were out and the blinds

raised. The processor was facing

the window, through which the main Heathrow Airport radar could be seen. Every time the radar scanner bulsad, every processor filp flopped and the

involved in the head crash has been re-loaded. Even so, investing in voice control equipment does appear

somewhat extravagant. The presenter himself, following an impressive mind-blowing session, seemed at a loss when asked by Focus who would be potential users of such elaborate and expensive gear.

In contrast the Plessey bubble memory device exhibit could well have been of considerable Unfortunately. interest. someone had stuck a pin-in the shape of a power cut - in the collected bubbles and demonstration was limited. Unlike their US competitors, Plessey seem loath to project themselves and their product into the DP market place and research is still proceeding. Meanwhile, such companies as Texas Instruments have no

doubt got salesmen floating out. swamping the DP industry with Other exibitors were hardly in the future technology category. The EMI voice recognition system is hardly new; similarly of customers.

Quest Automation's Datapad system already has a healthy list Not all DP professionals Tape drives with finger-proof would agree with Dr Chris Evans who, in the recently

did provide one highly significant factor; that the bask requirement of DP life is not published paperback "Science Fact", suggests that man is advanced technology, sophisticated software or intelligent co

blind soved the problem and the demo followed, whether to a successful sale or not we do not Moral: It is sometimes better to

leave your customers in the

The overwhelming necessity is for prime power. At the show, power cutting was rampal. Signal strength fluctuated in line with the air condition Typically, IBM had brough

its own outside generator. For the rest, it was all too often "corridors of low power."

mitted by Harold Mead, of Kilcreggan, Scotland, who wins the weekly £5 interrupt prize.

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JO NEAL STREET (ONDON MEQ) 75 (c.)

# IBM likely to scoop major client for SNA

the cards for IBM's SNA com-munications architecture. ICI's Fibres division, in Yorkshire, is in the course of installing an IBM 370/158 and is considering a network of SNA-oriented 3790 terminals. There are, however, at least some competitors still in

get an understanding of each

The workshop will give each

pair of training officers and

computer managers a model of a

company with training prob-

company's needs and produce a

One of the major aims of the

project is to produce a standard,

ideal training programme for

The workshop will be held in

Munich on December 7-9. Like

the first phase of the project, it is

being organised by the Institute

of Personnel Management and

the National Coal Board's

subsidiary Computer Power.

The working language will be

English. The cost is £90, which

Further details can be had

from Malcolm Campbell, Insti-

tute of Personnel Management,

Central House, Upper Woburn Place, London WC1H 0HX, Tel:

includes accommodation.

lems. They will analyse the

other's work.

course for staff.

general release.

01-387 2844.

progress, and that the 3790 is one of the competitors, a

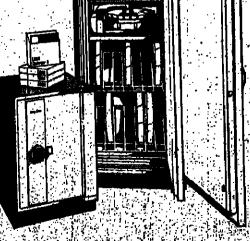
spokesman for the division declined to name any other contenders. Burroughs and Four a 2700 and 3 was one of the most Phase Systems (CW, January Protection di Phase Systems (CW, January Phase Systems

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# Rib-tickling...

IN Carson City, Nevada, accompanied one Sally Cohn October 1 will not be quickly forgotten. On that day 82 people from the world's greatest nation blew off at the start of the first international

The Whistle Off, previewed exclusively in Computer Weekly (Downtime, September 29), was organised by Logical Machine Corp as a publicity idea for Adam, the office computer which you program in natural language. The Whistle-Off was the idea of a firm called Gordon Bennett and Associates. Gor-

coachload of people who

*Magnetic future* OUR recent Delphic poil on

future technology (CW, September 29), has aroused a great deal of interest and Dr Christopher Evans and his helpers are now analysing the hundreds of replies. A mini-poll, based on our

questionnaire was neld last veek at Stanmore Junior College, north London, during an evening meeting on mathematics and computers, which included a talk by my editor on Can Computers Save Britain — and Who Cares?

An interesting conclusion of the mini-poll was that a ma-

with the help of his fingers whistled The Battle Hymn o the Republic; and the Adar computer itself, which did My The overall Grand Cham pion was Harvey Pollock, a barrister from Winnipeg

questioned believed there

The results of the Stanmor

poll were brought into

question, however, when it

was discovered that, due to

some confusion, one of the

questions asked, "When

would magnetic media be re-

placed by solid state devices?"

Although neither the inter-

viewers nor interviewees

understood the question, 15

eight of them said it would happen after 1995!

**ON SHOW AT** 

**SYSTEMS '77...** 

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the systems overall efficiency.

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equipment, thus considerably improving

people had a shot at it and

computer movement

with washboards, spoons and

thimbles; Jake Pultrum, who,

whose repertoire was base mainly on the works of Mozart. The real winner, however was Logical Machine Corp. For highlights of the Whistle-Off

were shown on television across the US, radio stations The contestants included a played Adam's effort and many jority of the 20 or so sixth formers and maths teachers

four) letter words and the hardware has arrived. I don't think it takes long to sell sets and record types à la Bachman to an intelligent person who knows nothing about compu-

# CONFERENCES

AMSTERDAM is the vanue for Iwo events organised by Online, taking place on November 14-18. The conference on business telecommunications win loature speakers from user organisations, for example British Steel, du Pont and Ford, as well as the telecomms consultancy and advisory side, eg Arthur D. Little, Pactel and ICSC, and the British Post Office and the Dutch PTT. The professional development seminar will be led by Dr Martin Healey and David Hobditch. Further details from Online, Cleveland Road, Uxbridge UB8 2DD, tel: Uxbridge 39282.

A REPEAT of the IAG seminar Decision Tables Revisited, first held earlier this year, will be given on December 12-13 at the Apollo Hotel, Amsterdam. The purpose of the seminar is to present the most recent developments in the area of decision tables. For further information contact IAG Headquarters, 40 Paulus Potterstraat, 1071 DB, Amsterdam, Netherlands, tel: (020) 76 35 26.

STUDIES of management in action by Sir William Atkins of the W. S. Atkins Group and Brian O'Heron of ICL will be presented at the one-day conference atkins Suggesting Product Management entitied Successful Project Management from Kingston Regional Management Centre which is to take place on November 23 at the Café Royal, London. Further details are available from the Conference Secretary, Kingston Regional Management Centre, Kingston Polytechnic, 40 Coombe Road, New Maiden. Surrey KT3 4QF, tel: 01-942 8955, ext 255.



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STOP WASTING MONEY! VicroSim 8080

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Some weeks ago, in his Mythodology column, Tom Gilb Now the challenge has been taken up by Jeremy Slater of Some weeks ago, in his Mythodology column, the solid stacked what he considered to be overstated benefits of attacked what he can be attacked benefits of attacked white attacked benefits of attacked white attacked what he considered to be overstated beliefed to database techniques. In his general criticism he referred to database techniques. In his general criticism he referred to the threat of the increasing use of minis for databases—the threat of the increasing use of minis for databases. machines which he considers inadequate for such tasks. such configurations can provide.

# Exploding the anti-mini myth

be able to express his problems

Database languages do not

encourage the use of complex

file structures. A given database

system will give a choice of

possible storage structures and access mechanisms. A database

will be a model of some part of

an organisation for which one

wishes to record and handle data

and produce useful information

A successful application of a DBMS occurs when one has

arrived at an adequate model

which reflects both data and its

usage and which can be rela-tively easily converted to a

physical database using the facilities of the chosen DBMS.

Total failure and non-cost effec-

tive database applications can

more often than not be traced to

insufficient understanding of

the problem; or trying to start

too big too soon.
GO TO statements and virtual

memory have been much ma-

ligned because of their misuse.

Anybody can misuse anything

including database manage-

We at Norsk Data have been

implementing online databases

ment systems.

in acceptable terms.

IT is well known, and has been accepted from Biblical times, that you cannot be a prophet in your own country. It is therefore not surprising to find Tom Gilb slaying dragons of IMS, Codasyl and databases on minis in an environment separated from his homeland (Norway) by the North Sea (CW, September 8).

One of the reasons why he has yet to find a successful database user, be it IMS or a Codasyl type database, is that he has a gift for either not meeting them, or when he meets them of carefully forgetting the conversation

At a packed meeting of the Norwegian Computing Society last year I opposed him on several accounts, and I would now like to describe why.

My own experience is limited mainly to that of implementing a Norwegian Codasyl database system on a Norwegian minicomputer. However, I would like to show how that refutes Tom Gilb's arguments.

Database manipulation languages are not obsolescent, as (I am thinking of Codasyl) still represent the cheapest way to do it, and there is nothing to replace them anyway.

on minicomputers since January 1975. We now have some 30 The next step is relational installations running from five databases, when their use can be to six terminals, a 128K byte explained in three (or maybe machine, 10 Megabyte disc up to a multi-machine distributed database system with four machines, 1.5 Megabyte core, 200 Megabytes disc, plus 60 terminals on a data network.

How then can Gilb claim that database systems are too lavish

If a customer knows what he wants he can be in production with his DBMS online within from one to three months after getting his hardware. If he isn't running a test database inside

something's wrong.

Of course mistakes can be made. We had one case when membership in a manually maintained set was used as a status indicator. There were 50-60 set members per set, and it had been implemented as a single chained set. One consequence of that is that we now vet all database designs, thereby taking upon ourselves the responsibility for any "heavy' databases.

I have spent a year teaching people to use our DBMS online. using one week courses. Most students can program and they are normally online against a predefined database using a simple query language at the end of the first day. It takes about two days to learn the

If you can get an order entry system using a DBMS up and current access, logging / recoweeks from scratch, how would you justify not using it? If you belong to an organisation which noves with the times, how is changing your database every other month going to go without the reorganisation facility supplied as part of the DBMS you don't use?

I agree with Gilb that minis are a threat, but it is certainly not a threat to the user, it is a threat to the continued use of mainframes for database applications. The quality of software of all types on minis is now not particularly different from that on mainframes.

On minis you can: Run time sharing, batch, remote batch and real time, simultaneously; use Fortran, Cobol, Basic, Similia, BCPL, Coral 66, Algol, PL/I, etc; have a few thousand M-bytes of online disc

online DBMS.

It is in fact nonsense to say that they are "unsuitable due to the lavish overhead costs". Our DBMS, called Sibas, include facilities for Codasyl; multi-user concurrent access; a maximum database size of 3.6 x 10 bytes: complete privacy functions; complete backup/recovery roll back before/after image logg ing; an average 20-30 DML call executed per second; and distributed databases standard soft

It is better to have you database on a mini because on-line it is always cheaper; it is physically portable - and it is good fun to go distributed! Finally, our first customer for

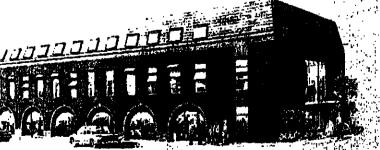
a database decided to go that way because they wanted distribute the availability information around their concern, and have it online.

In 1975 they jumped in moving from a Cobol/IBM batch environment, to a mini/Fortran online service with five or at terminals, 128K byte and # Megabyte disc.

They now have two database each on its own mini, coupled via software with 24 terminals Any or both databases can be acressed simultaneously from any terminal. They have decreased costs (totally), thus increasing production, and they are now buying a third machine

The author Jorenny Salter has degrees in physics from both Oxford and London. He has been in the London. He has seen in a computer business since 1870 and has been involved in it design of systems software in minicomputers, databases, it minicomputers, databases, it is a computer and a computer an

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Singapore and Hong Kong.

David Tebbs, director of BIS

Applied Systems, is now touring

Australia, South Africa and

Hong Kong, giving courses on

database and real time system

design. He will also be a speaker

at the annual Australian Computer Society Conference later

AN imaginative programme ranging from discussions of the social and political impact of computers to computer cartoons has been organised by the British chapter of the ACM for its 1977/78 programme.

**Expanding BIS on** 

the takeover trail

benefits that can be obtained by

associating with a group, such as BIS, which has substantial

In the UK, the BIS group has

three companies involved primarily in DP — BIS Applied

Systems, which specialises in

Rouer Graham . . . need to

techniques and a wide range of

training and consultancy

activities; BIS Software, which

diversify outside the comput

management

seeking to expand its activities activities but realising the

database

through the takeover of other

backing to groups of individuals

wishing to start their own

During this year, BIS has

approached over 20 companies

with a view to a possible

takeover but none of these

discussions have led to any

If the circumstances are right.

BIS would be interested in

taking a minority stake in a company during an "engagement" period, after which either the BIS holding

could be increased - or the

company could decide to sell

For the financial year ended

February 1977, the BIS Group

had a turnover of £2.7 million

with a pre-tax profit of £356,000.

According to chairman of the group, Roger Graham, they are

currently on target for a

Graham believes that to

maintain this growth rate, the

group will need to extend its

operation and it is likely to

acquire a minority interest soon

in a company outside the

computer industry, but which

uses computers as an integral

Within the computer business. Graham told

Computer Weekly that the

group has defined a number of

specialist areas in which it is micrested, including systems

houses, service bureau, word

Focessing and point-of-sale

Graham typified the types of

perations which he believed

part of its operations.

urnover of over £3.6 million.

positive outcome.

nies or by giving financial

Three of the sessions will follow up the themes of the Hedsor Park weekend conference earlier this year, entitled "Can computers save Britain?" (CW, July 14) The conference was organised by Computer Weekly and the ACM, which is the US equivalent of the BCS.

Dr Christopher Evans, psychologist and

next Tuesday (October 25) and will look at the psychological and social impact of computers.

On January 17 next year Barrie Sherman, research director of the white collar union ASTMS, is to discuss the effects of technological change, particularly on the working environment. And on April 11, a pane discussion of government policy for computer technology will include Conservative MP Ian Lloyd and Reay Atkinson, director of the Central Computing Agency.

The other sessions outside the themes of the Hedsor conference start with Logica chairman

Philip Hughes discussing industry changes over the last year on November 29.

On February 28, Colin Emmett of the Royal College of Art will discuss computer cartoons, including film demonstrations, while on May 23 Royer Pye of Communications Study and Planning Ltd, will look at mass com-

All meetings will take place at the Polytechnic of Central London, 115 New Cavendish Street, London, WC1, and start at 7.15 pm. Wine and refreshments will be served

research projects in the 50

medical research institutes

The academy will run the IDMS database management

system to keep track of the

projects and will also collect

around the country.



ICL gains firsts in

have a say Computers can still have a say on the Carter Committee's report on the Post Office, as copies of the survey being carried out by the Data Processing Management Association and Langton Information Systems are still available.

**Users** can

But hurry, as the auestionnaires must be returned in the next 10 days. Results will be published in December.

The address of the DPMA at 27a York Road, Maidenhead, Berkshire. Denmark and USSR public health statistics for the TWO firsts have been notched World Health Organisation. up by ICL. One is an order from The 2903 is the academy's first the USSR for a 2903 and the computer. The £200,000 machine second is a move into the Danish market with the 2960 ordered by

will have 24K of memory, two 60 Megabyte disc drives, a 7502 a manufacturer of cable, wire and nails, Nordiske Kabel-og terninal, two direct data entry stations and two display termi-The 2903 is going to the The 2960 in Denmark will Academy of Medical Sciences in Moscow, which co-ordinates

replace a 1903A and enable Nordske Kabel to expand its communications network which serves a wide variety o users within the company throughout Denmark. The 2960 will serve eight 7502s, 41 terminals and support IDMS.





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Prime Computer (UK) Limited. The Merton Centre. St Peter's Street. Bedford MK40 2PN paid the Ceach House: 173 Slieën Lane. London SW14 8NA Telephone Bedford: 0234 85127 of Handon 07-878 4045

#### could meld into the BIS group as companies or groups of individuals wishing to maintain November 13, 1975). The group also has operations Norsk Data names City firm as UK distributor NORWAY'S leading minimaker, 256K 16-bit words directly and

Norsk Data, has signed up a UK distributor for its Nord line of high nords are main memory. high performance scientific and minicomputers.

The Norwegian machines are

"We will be concentrating on london and the South East to san with," Richard Norton told Computer Weekly. "We will be selling to the end-user and to systems

new machine in the Norsk ata product line is the Nord-bry which can address up to

word cache; is programmable in Fortran V, Basic, Cobol, Coral 66 and RPG II; and runs under the Sintra III virtual storage operating system (CWI, September 8). The database system is Sibas which, like IDMS on the PDP-11, conforms to the Codasyl recommendations.
As well as the Nord-10, the

line includes the 64K-word Nord-12 process control minicomputer and the Nord-50 32-bit arithmetic processor which needs a Nord-10 front

#### Hazeltine terminal

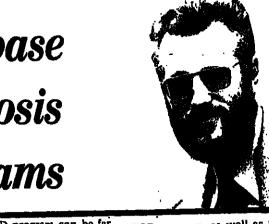
nazerine advertisement amount-ing the new H160 terminal, published in last weeka Computer Weekly, gave the wrong impression of the appearance of the terminal We

provides custom bullt software and systems such as the Midas banking and insurance series; and BIS Deltak, which provides self-instruction systems for inhouse training. BIS Software was formed when BIS took over software house Kingsley-Smith and Associates two years ago (CW,

to be marketed by Richard Norton and Co, a company based in the City of London which has bith a company based in the City of London which has bith a company based in the City of London which has bith a company below the company below the company below the company below the company to the co which has hitherto specialised in iding bureau services to the Stock Exchange and City astitutions, using a Digital Equipment PDP-11/40 mint.

systems builders, and the market areas we are aiming at applications where the machine will be subjected to severe environmental condiapplications involving Retworking, and database

# **Database** diagnosis programs



AS a matter of routine system design for about the last seven years, I have made it a practice to specify a "database diagnosis program" in any system which includes a complex central file or database. I do it as naturally as I have put on my car safety belt since 1960.

I know that not everybody shares my interest in seat belts, ... but I don't push the point since, in the long term, optional seat belts will result in an increased group of reliability-oriented system designers. I have been surprised, as the

years speed past, and the iterature on databases ncreases explosively, to find virtually nothing on the use of database diagnosis programs in this literature. This inevitably results in most database systems being planned without such a facility. In the long term a set of analysis programs will be developed to solve some obvious operational problems such as mysterious break-downs in the database. But infortunately these will often be created for one-time use and iscarded shortly thereafter.

A database diagnosis pro-gram should, in fact, be a focal point of continued development of our ability automatically to analyse one of our most critical resources, the centraised database. It should probably be developed over a period of years as experience dictates. This means that it must allow the user a wide variety of parameter options as to what shall be analysed and how deeply it shall be analysed. Data Base Diagnosis (DBD) programs can quickly become very machine-resource demanding, if not limited in some

A DBD program can be far more effective if it is considered early in the design of the project. One reason for this is that the fundamental redun-dancy within records and fields which is a prerequisite for detection of certain classes of errors, can be designed into the records and fields from the beginning. Another reason is that the benefits of DBD can be enjoyed throughout the entire project development cycle.
It is an anachronism to think

that the application programs provide the necessary tests on records and input data, to guarantee the quality of the database. A true database implies many independent programs which only see part of the data picture BUT WHICH ARE CAPABLE OF DESTROYING ALL OF IT OR ANY ONE PART OF IT.

Only a DBD program, like the Data Base Administrator concept, can keep quality control over it all. A database diagnosis program can include every conceivable validity test applied elsewhere to all fields and records. There is no reason to be afraid of repeating checks (use the same subroutine). It gives protection against failure of one set of checks, and has the added advantage that the DBD program checks can be A DBD program is an

excellent automatic program testing aid during initial pro-gram development. It tests that all the programs are co-ordinated to the common agreements on records and data elements. It should be a required part of the program

Auditors should insist on

auditing and is the only practical way of thoroughly checking a large database.

energy which I see presently maintaining humanly readable database documentation, we code) documentation, we should redirect it to putting the same specifications in programmed form. The obvious

this advice, and applied it to an eight year old "no problems database in an online system got a list of 300,000 errors in about a million accounts. The money amounts were all right

marketing and top management got their reports, was very wrong Result? Several months overtime a the branches to clean it up and a 20 minute DBD program rur each morning to keep it clear - by top management order. For more information see my

In conjunction with the David Hann Organisation, offers readers OTHEL-

LO, the world's fastest selling game.

OTHELLO is a game of strategy for two players. It is played with two-sided, black and white counters

on a squared board. At each move

you capture one or more rows of

them between your own places. The

captured places are turned over to

show your colour. The process

switches back and forth throughout the game, and part of the appeal is

the potential for dramatic reversels

right up to the last move of the game.

sets of OTHELLO at £3.75 per set. I

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onent's places by trapping

book "Data Engineering (Stu-

DBD program, as well as the possession and use of one for the programmers. DBD program amounts to automatic

which tests all indexes, chains, records, fields, inter-field relationships, inter-record relationships and even relation ships between the database and other existing files, is really, if you think about it, an automatically readable des-cription of the database. Instead of all the incredible being devoted to making and

result is the saving of human effort to read record printouts and to read DB documentation with a view to assuring the correctness of one or both. One bank which listened to

but the statistical classifica tions of customers, from which

MMDS has developed modules to manage the leading database management systems and present the user with a consistent interface. MAS II is accessed in transaction mode, and includes its own small TP monitor, while MAS I worked in

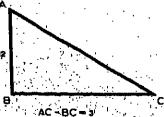
development effort to the countries where appropriate exper-tise exists, explained Neville Cerfontyne, who is in charge of developments outside the US.

pproaches would obviously be to the market leaders such as Digital Equipment, Data General and possibly the IBM Series 1.

**Experienced users** 

A MISPLACING of one or two letters can often create entirely the opposite impression to that. readers of the Item on the Disspli users' conference (CW, October 6) seriously thought that local users would be talking about "the experience with the system." The ntended phrase was, of course,

Puzzler



AC-BC-3 WHEN this type of information is available about any right-angled triangle, there is an ancient formula which gives Longth of Hypotenuse in only a few seconds. Can you work out what it is before turning to page

# SOFTWARE FILE

# Index generation package in UK

future has been increasingly recognised, but a kindred processing equipment. The Austrian developer of an index generation package is seeking to fill this gap in the UK market, by negotiating an agency in this

software in the office of the character-string data is usually applied to academic areas like literary and linguistic analysis. subject — index generation — is Ivo Steinacker, the developer of seldom approached by the developers of commercial word processing equipment. The "down-to-earth" areas like office correspondence.

"If a businessman knows that he sent a letter to so-and-so about roller bearings, but can't

should emerge by March 1978:

and future plans include imple-

mentations for mini-mainframe

stand-alone minis.

distributed systems, as well as

The database-oriented MAS II

is already available in the US

and should begin to be marketed

in the UK at the end of this year.

handling production control,

inventory management, order

processing, cost control, busi-

MAS is built of six suites.

# **Revised US version** for Hoskyns system

A RANGE of manufacturing The first mini implementations software, originally designed in the UK by Hoskyns, has emerged from the US in a radically new version, aimed at accommodating the growing use of database. Further versions, directed at the expanding minicomputer market, will be Hoskyns' responsibility.

The Hoskyns suite was originally known as Standard Systems, but, for US consumption, was renamed Modular Applications System. In the US, it is handled by Martin Marietta Data Systems, of Baltimore, which subsequently took control of Hoskyns (CW, April 13,

MAS II and related new versions have been placed under the general heading of MAS-80. The major innovation with MAS II is that the modules, instead of using several conventional files. are centred around a single

The policy is to direct MAS

Cerfontyne said that the first

company and "roller bearings,"

and it will pull out all letters

referring to both."

The index is generated in machine-readable text." such as a tape of correspondence built up from day to day by a word processing system. Obviously, in such a case, periodic re-runs will be needed, to generate the index for the updated tape.

The index generation software will search for phrases as well as single words in the text. To determine initially the correct depth of indexing, a user would normally wish to run the package several times with different parameter values, said

The software will run on the IBM System 32, or any other machine with an RPG compiler he said. He is also willing to rewrite the package in another lunguage if there is a demand for

There are already two prestigious users of the system – the German Standard Institute and the International Telecommunications Union in Geneva. A test run has also been made by the European Space ness planning and financial

#### IAM released in US unnecessary calls to systems A RIVAL for IBM's Vsam and software routines. The product already has a

Isam disc-file access methods has been generally released in the US and Canada, and is likely to make its appearance in the UK soon. The product, Innovation Access Method, AM, comes from Innovation Data Processing, of New Jersey.

IAM employs a straight-forward indexing system with single reads and writes,

programs. Until now, the product has been on "limited distribution". Westinghouse, agent fe many Innovation products.

number of users in the US, who

have reported time savings of

over 50% in the running of some

confirms that it is examinate IAM with a view to UK logical chains and a good many has been made.

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# EDITED BY STEPHEN BELL

# Interdata enhances **Filing** Data Boss OS/32 MT system

has been found by Florida WITH an enhanced version of the OS/32 MT operating system, company has successfully marketed its database Interdata has introduced dynamic memory management management system Data Boss techniques on its 32-bit (CW, September 30, 1976), to minicomputers. At the same estallations in the US with very time, the company has released large microfiche libraries. UK an operating system adjunct agent Turnkey Software, of Chalfont, Bucks, is now approaching the growing online programmer market. approaching the same market in Europe.
Users with large microfiche

lbraries have much the same

requirements as those with large

computerised databases.

notably a need to access the

same microfiche by several

different keys. The indexed Data

Boss system is well-suited to this

The simplest approach is to

retrieve from the database a

reference number which will tell

the user where to look for the

appropriate fiche or film on a

separate physical storage

The terminal can, however, be linked direct to some kinds of

UK price for the basic system is £8,000. This supports a

database of up to 32 Mbytes.

There are further charges for

more capacity and multi-level

indexing, but the terminal-

PROGRAMMER NOTES

Documentation—

The dynamic version of OS/32 MT2 supports up to 255 concurrent user tasks. The previous version of the operating system had the same theoretical limit, said UK director Gordon Ambidge, but in order to exploit it practically the tasks had to be very small. With dynamic memory management, 255 concurrent tasks became a practical reality, he claimed.

Dynamic memory manage ment examines the actual memory requirements of tasks at regular intervals and adjusts the size of the partitions appropriately, rather than setting up fixed partition sizes in advance.

microfiche reader, so that retrieval is completely automatic. Data Boss runs on Such "heuristic" approaches to producing increased Digital Equipment PDP-11s. throughput have been employed under the RSTS-E operating by other mini manufacturers, uch as Data General with its Advanced Operating System (CW, November 25, 1976). AOS US users of the Data Bossmicrofiche system include the manages the problem by file managed by the system there will eventually have a size of 2.500,000 records. adjusting priorities rather than memory partitions.

Online programmers are accommodated through the separate Multi-terminal Monitor, MTM supports up to 18 concurrent terminal users and 16 background batch tasks. Software to maintain private

need to be all things to all men

DOCUMENTATION is one of e most widely criticised pects of programs — both я the guidance of a nonr-oriented end-user, and that which will only meet the eyes of fellow programwidest sense,

documentation includes everything from end-user and operator instructions to the wcharts and the comment ines in the coding. A critical, but seldom asked question is whether the programmer should be expected to write naterial aimed at these various audion 2000. various audiences equally distallations, conscious of

criticism nentation, tend to impose increasingly rigid standards, it is programmer this often means reams of narrative and degrammatic documentation. reams of nerrative and matic documentation. programmers find this anything be done to strengthen it for example, a strengthen it for programmers find this and of little relevance the job for which they were Aed. The inescapable result for bad documentation. how do the readers of this hum handle the problem of

called upon to be a technical programmer? Do you consider yourself adequate to the task, or do you think DP departments could benefit from employing a specialist technical writer? Programmers are in a good.

position to judge maintenance documentation, since they are both its producers and its consumers, is too much or too little documentation required. by "installation standards"? What kind of documentation do you find most helpful, and what do you think is Documentation is also the

interface between user lefinitions of the problem and the formulation of the program to handle it. As such, it is the weak link in the program

interactive multi-user capability on Interdata equipment, ensures that programs and files for testing are kept rigidly separate from production programs.

Dynamic OS/32 MT will be

officially released in the UK within the next two weeks. Implementation of a similar operating system on Interdata's 16-bit equipment is being considered, but no firm plans have been made yet.
The staff at Interdata's UK

software development centre played no part in the development of the latest operating system, but there are hints that the UK centre is working on another large

project, as yet undisclosed.

In its 16-bit line, Interdata has ne, an enhanced release of the

released the 16E processor, capable of addressing up to 256 Kbytes of memory. At the same OS/16 MT2 operating system has been made, with event driving of tasks and intertask communication. A new Fortran IV compiler is also available.

scheduling aid. Like Value's marketed in the UK by RTZ Value, a division of RTZ Computer Services (CW, March

31).
The latest product, Stars (Status Revision System), allows the actual progress of generated by Value's Scheduler. Monitoring of tasks in the processor itself is automatic,

Scheduled warnings from the Stars THE range of software products designed by Value Computing, of Philadelphia, to assist the machine, progress of tasks such operation of a DP installation,

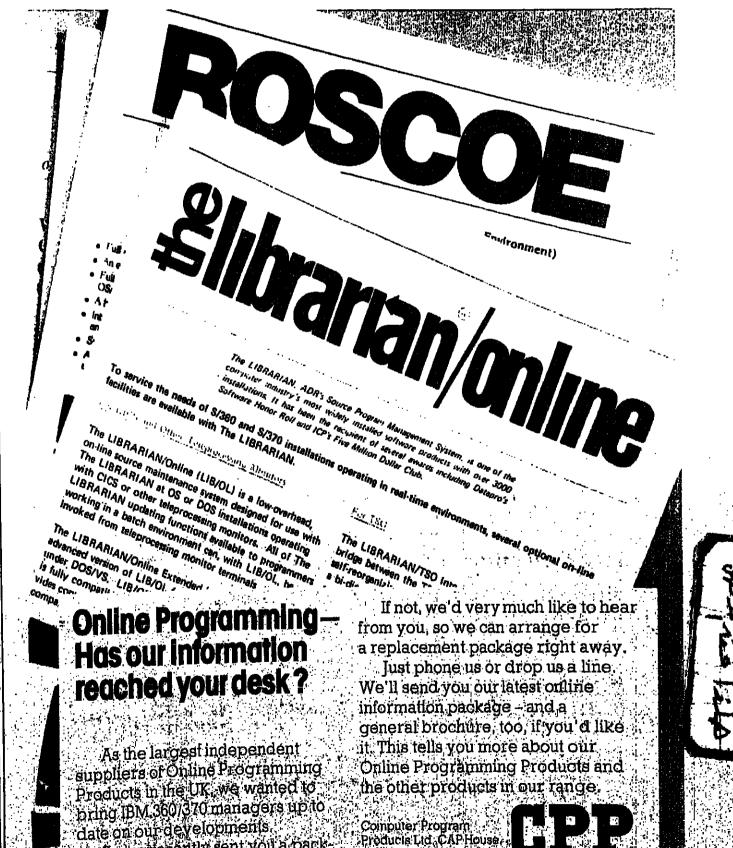
manually, through terminals. Stars will warn the user when actual performance is falling behind schedule, so that the schedule can be reorganised, it desired. If a job goes wrong, the user can be informed of any other jobs which depend on f and, in consequence, cannot be

A number of large users in the UK are already interested in the package, said an RTZ spokesman. A UK price has not yet been established.

### Hoskyns ties up another FM deal

ANOTHER facilities management contract has been gained by Hoskyns. The company has taken over the ICL 2903 and seven data processing staff at Customagic, of Manchester, maker of furniture coverings.
In a few months the 2903 will be moved from

Customagic's site to Hoskyns Manchester Systems Centre. This will enable Customagic to continue using the machine, while saving office space. The company sise expects to make a 30 per cent saving on its DP budget. The deal is valued at about \$190.000



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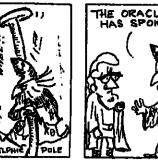
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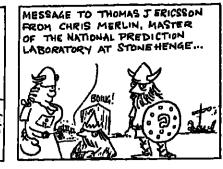
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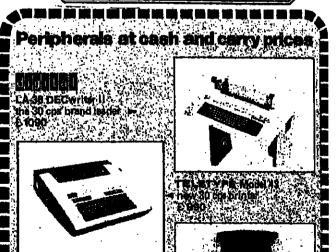
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RECENTLY appointed deputy di-rector of CAMA, the Control and Automation Manufacturers' Asso-ciation, is John Christopher, who has een assistant director of the Asso-

ceen assistant director of the Asso-ciation since 1975.
He thereby relieves Robert Blag-brough, who remains chief executive of CAMA, of the Association's day-to-day running. Blagbrough has become chief executive of GAMBI-CA, the recently formed Group of Associations of Manufacturers of British instrumentation. Control and British Instrumentation, Control and

Eillot Wassarman has joined Qume in California as vice-president of marketing. For the past two years he has been director of internations crations with the Monroe division of Litton Business Systems in New

Peter Corke, until recently deputy MD of Quotel, has been appointed managing director of Scan Ltd. which owns Quotel, and also becomes a director of Scan's parent. ne CKC Group



Edwards <sup>\*</sup>

Derek Edwards and Tudor Francis of CMG Computer Management Group, recently appointed directors of the company, will retain their

Sean Dixon-Child, director of NCR

Frank Zaple, lately of Spicer and Pegler where he was a consultant, has joined Allied Business Systems

**End of Summer** THE Summer Computer League champion, Jadpu, winning its last game, thus getting 16 points out of 16. SIA lost its last game and so goes down with Computing. Defeat for TSL in Division Two in the last game, and wins by Lambeth and Southgate sent TSL into Division Three with Laur Punter.

A beery evening on the Thames gave the champions a chance to celebrate, which Div-ision Two winners Datascene (left) certainly did. Our picture on the right shows the league organiser Danny Boreham (left) and the se-cretary Val Ellis. With the special hies they were awarded for all elr voluntary hard work.

Alan Starkey has become nonexecutive chairman of Jackson Associates of Chichester. He is also

Framptons Nurseries Ltd.
The board of Jackson's has also been joined by Michael Burton, director of C. E. Heath (Insurance Broking) and Chris Rengert, senior partner of Slater, Chapman and Cooke and formerly auditor of Jackson's. Both will be non-exec-



responsibilities as customer service

Ltd's financial and government division, has been appointed to the main board of directors.

Smet replaces Georg Herzfold, who has resigned as chief executive officer of the European operation to oursue personal interests

Michael Meredith, former area sales manager with Computel, has joined CTL as a senior consultant.

Valere de Smet has joined Decision Data as vice-president,

he held marketing management

positions with Singer and Varian. De

Graham Page, principal computer assistant in the data processing department of London Transport, has now been appointed as training manager of its mechanical engineer-

ing department.

Another appointment at London
Transport is that of Paul Larkin as
principal computer assistant (development). He has been promoted from a senior analyst,

Louis Navin, vice-president and

# NAME OF TAXABLE PARTY.



Results and League Tables

Division I FNS 5, Lloyds 0 FNS 5, SIA 0

Jadau 5, Lloyds (

Division t

Lambeth 5, Extel 0 Southgate 5, TSL 0

Minneapolis, has also taken on the Slik Finish Ltd of Borehamwood, job of chief financial officer. Sign Herts, has made the following appointments: Frank Airey, former-Ucland, formerly assistant secretary. sales manager of the company's couthern division is now director of has become secretary. sales and marketing; Frank Smith, Christopher Hinde, formerly previously a representative becomes sales manager, Southern division; Jim Kidby, another representative, is rescurch assistant at Bristoi University, has become a lecturer Loughborough University's Department of Computer Studies

appointed sales supervisor; and David Ansell, previously supplies manager with imperial Typewriter Company at Leicester, has been appointed as sales administrator Northern division. Harvey Jacobs has become recruitment consultant with Brytck's computing personnel

> Ivar Rachkind, a senior systems analyst with GFC, has been made database administrator with GEC Elliott Control Valves.



Stanley Nice, until recently vice-president, programmable, calcula-tor/systems marketing with

Bankers automated cleaning service.
G. D. Robson, A. Perairia, B.C.S. Hampshire branch. Office of population congest and Surveys, Titchneid, 19,00.
Future storage devices, B.C., Belfan branch, Windsor Hotel, Selfan 18,26.

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nal specialised trade fair: Glahá leigras
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# OCTOBER 24

introduction to microprocessors. Dr. B., Boratt, BCS, Merseyside branch, Liver-pool University Computer Lab, Brownlow Hill, Liverpool, 18.00. Pascal and Aigol 88. W. D. Shepherd, BCS, Glasgow branch. Daniel Brown's Resigurant, Glasgow. 19.00.

OCTOBER 25 Innovation and development. J. Street and E. Shaft, BCS, Nottingham branch. Ti main lecture theatre, Nottingham University, 19.00.

OCTOBER 25-26 Computerisation Computeritation an objective outlook, seminar. David Firnberg and A. R. K. Hardcastle. DPMA. Marine Engineers Conference Centre. London ECS. Details: Betty Smith, 0628 29978.

Meeling. RTL/2 User Group. Excelsion Hotel; London (Heathrow). Details: SPL. International, pl.-638 7833.

OCTOBER 25 28 Radar 77. - conference: IEE, IEEE, OCTOBER 26 Legislation and operations. BCS Operations Group. Polytechnic of Central London, London W1, 15.00.

London, London W1, 15,00.

STS (Statistical Tabulation System).

BCS, Study Group for Computers in Survey Analysis. Polytechnic of North London, London N7, 17,30.

Our job, computer performance measurement and timing. R. Hanson, D. J. Hall.

BCS, S. Wales branch. Royal Hotel.

Cardiff, 19,00.

Word processing & Baston C. University

Cardiff. 19.00.

Word processing. K. Baxter, C. Holman. BCS, Teesside branch. Teesside Polytechnic, Middlesbrough. 1900.

Distributed intelligence through the use of intelligent terminal systems. Raytheon: Cossor Data Systems. DPMA. Essex branch. Raytheon Cossor Data Systems. The Pinnacles, Harlow, Essex. 20.00.

OCTOBER 27

OCTOBER 27 Compilier graphics and animation. Prof. F. R. A. Hopgood, BCS, N. Willerbranch. Royal Military College gt. Science. Shrivenham. 20.00.

OCTOBER 27-28
Meeting, IBM Computer Users' Association Operations Group, Centre Hotel, Liverpool OCTOBER 31

Transferable systems, BCS Medical (London) Group, ICL, Euston Road, London NWI, 17.30. Word processing conference and exhibition, institute of Administrative Management, Scottish branch, City Hall, Glasgow, 9.00.

Measurement of computer performance. Prof P. A. Spinet, BCS, NW London branch. Railway Hotel; Greenford, Middx. 20,00. Annual Railway Hole; green ord, model 20.00.

NOVEMBER 2

Management Education Seminars

Project management in a structured environment. Data Processing Management Association. Montgaing Hotel, London Wi. 14.00.

In there a future for the DP professional? John Coldenith, ECS, South Essex, Branch The Bulk Eye, Resilies. 19.45.

nal specialists and rais away states founds. Moscow.

NOVEMBER 3
Cybernetics and rais away states founds. ACS Law Group meants for the comparison of the com

# **Coming of the** micro systems revolution annual increase in sales for a PDP 11/45 or 11/70 equivalent

reached.

microcomputer system once

current micro price levels are

The report highlights two

separate aspects to the question

of software for the new

microcomputer systems. First,

there is virtually no com-

patability between micro

software and the wide range of

applications programs available

overcome this, programmers with new skills will be required.

Secondly, the potential outcome of litigation in the

future could well open up that

wealth of software, and greatly

increase the potential market

penetration. Again the major

problem will be in finding

enough programmers to go

It is the outcome of the

pending litigation, and primarily

the case drawn up between Data

General and Fairchild

semiconductor, that holds the

fundamental key to the

immediate future of the microcomputer. In essence,

Data General is sueing Fairchild

for inappropriate use of trade

secrets in the design,

manufacture and marketing of

operation of the Nova

minicomputer, and although it has different architecture, will

General claims that every

customer signs a software

licence agreement, and that

anyone using Nova software on

another machine is in violation

is unlikely to come to court for

several years) the move away

from the mini will be slower, and

learned. If it loses, then existing

microprocessor.

of that agreement.

available for micros.

round the new applications.

minicomputers. To

THERE is little doubt that microcomputer systems are about to make major inroads into the OEM minicomputer marketplace, according to a report issued by the First Boston Corporation, a New York company of investment Rankers. Price erosion in micro components, and the potential outcome of forthcoming litigation between mini and micro manufacturers, are the key elements in this trend. ding to the report, and the only major stumbling block will probably be a lack of programmes to meet the and of new applications.

Although the current crop of microprocessors have failed to take away market share from the minis, due mainly to the fact that they are predominantly slow in operation and only 8-bit, the report points to a turning point early next year. At that time, both Intel and Zilog are eduled to loin the ranks of 16-bit device manufacturers. and the report's author Ming Y Li, talks of the Zilog management's prediction that its device will have the equivalent computing power of a PDP 11/45 or PDP 11/70.

With a potential CPU cost of \$5 per chip in a few years time, there should soon be considerable migration towards the micro and away from the

To approach the market correctly, however, it will be necessary for the semiconductor companies to enter the field of heavy software support in applications programming, and to establish chains of service centres. Both of these are very expensive exercises, and have been a thorny problem for the companies before, when they have entered the calculator and digital watch markets, will require new software to be Nevertheless, the report predicts a considerable swing towards

Some 50,000 microcomputers and systems will be sold this year, it estimates, and its bets, following the recent semiconductor price crosion announcement of its entry into indicates indicates a potential for a 100% microprocessor fabrication.

Intel adds floating point arithmetic library free or integer conversion routines, floating point comparison routines and negation, and

ADDITIONS to its software capability and its range of incircuit emulators have been made by Intel. The additions cover a new floating point arithmetic library, FPAL, and emulators for the MCS-85 and MCS-48 micro systems. The FPAL, which will be

supplied free to all registered Intellec diskette operating system owners, is intended to prototype system hardware and reside on a diskette operating the normal facilities of testing prototype system hardware and reside on a diskette operating the normal facilities of testing system of the normal facilities of testing system owners, is intended to reside on a disc as a library toutine to be linked into ritten. It consists of object subroutines that implement the Intel floating point standard for both assembler and high level

language programmers. It provides a 32-bit format It provides a 32-bit format add, subtract, multiply and divide, as well as floating point the CPU socket in the prototype, replacing the CPU chip, which can be a 8048, 8748 or 8035 device.

the prototype via 40-pin adapter plug, leaving the 8085 CPU chip in situ, and operational. For the MCS-48, the ICE-48 connects via

Successor to System 80 A SUCCESSOR to the System 80 system can be configured as a

RMX/80 executive.

85. the module

Systems incorporating up to three Zilog Z-80 micro-processors, with access to a potential read/write memory of 192K bytes.

Known as the Trivector

Known as the Triton 3, the system can be configured with one, two or three processors,

introduced by Trivector system and two slaves, with the master and two slaves, with the master processor having access to the total addressable memory capability.

Interface boards are available for a wide range of peripheral devices, such as displays printers, teletypes, floppy and hard discs.

# How PAL differs from IDC Europa

the caution with which all market share figures have to be approached.
It is clear from the table,

**Addition to** 

AN addition to the range of

Datasure units from the

Laboratory Products Group of

Instem is a microprocessor

controlled cassette-tape module

designed to comply fully with ECMA 34 standards.

Standard features of the type 1700 module include read-after-

**Datasure** 

particularly in the case of IBM and ICL, that the two research organisations, IDC Europa and Pedder, have come up with wildly divergent figures, yet it would be wrong to assume that either set was inaccurate. The reason for the

discrepancies becomes clear when one learns that while valuation heavily deflates ICL's company has.

Pedder Associates, underlines base, IDC heavily marks down the value of old equipment, so that machines like ICL's System 4 or Elliott 803 are regarded as having little residual value.

> the value of any discontinued system when last marketed. which means that ICL's large installed base of obsolete machines enormously increases the company's market share. IDC has consistently

Pedder on the other hand uses

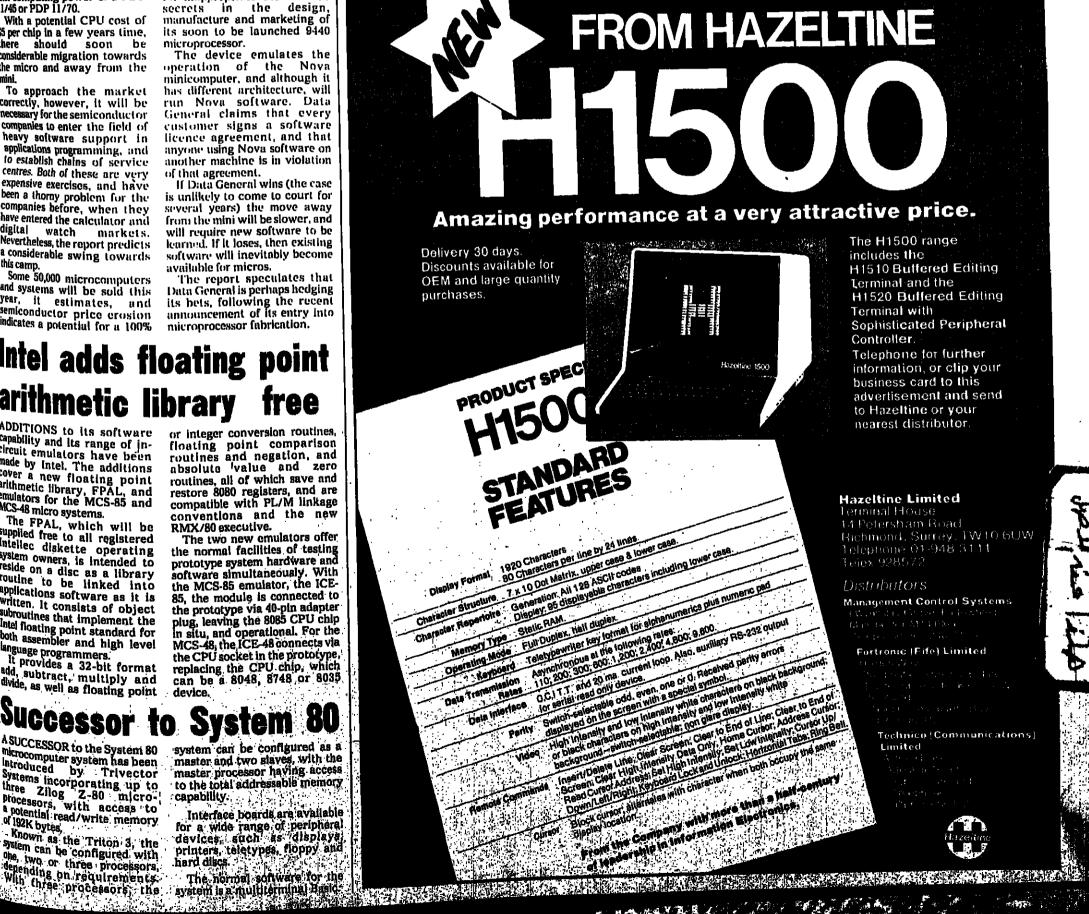
emphasised that its approach to

the ICL share to increase once the large 2900s are installed in substantial numbers.

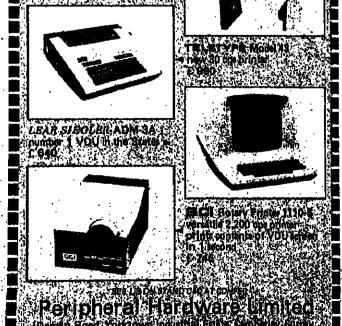
Neither method of valuation can be said to be right or wrong: IDC's is particularly sensitive to recent trends and tends to exaggerate the success of a company which has installed a large number of large systems over a short period; Pedder's gives a stronger correlation between the value of a base and the number of customers a

#### % SHARE BY VALUE OF UK-INSTALLED COMPUTER SYSTEMS AT END 1976.

ite electronics, fast rewind, sitive file protection	Supplier	Source				
safeguards, BOT-EOT sensors, and in-line "transparent" data collection with remote control. It has been designed primarily as an In-line listener for the Datasure laboratory data-acquisition and processing system, recording information while simultaneously passing it to another receiving unit. The transparent operation is useful in situations requiring local copies of data.		IDC Europa	PAL Annual Census			
			All systems	Mainframes	Mainframes £100K	Mainframes £500K
	Burroughs Honeywell IBM ICL Univac Others	6.1 8.5 47.2 26.5 6.0 5.7	9.0 6.8 25.5 28.2 3.5 27.0	6.7 8.2 37.1 37.7 5.2 5.1	7.1 8.0 37.4 37.8 5.2 4.5	5.8 6.5 42.8 34.1 6.0 4.8



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# **LETTERS**

# University shows how micros can help industry

I AM unable to let Focus (CW, September 29) get away with it! ...on teaching the academics" cover such large and diffuse body of institutions and departments that a general reply is impossible and therefore I confine myself to a reply that is specific to this

department.
Teaching microprocessors is not a simple affair, nor is it cheap. For a start the microprocessor is only one example of a digital system, although in that context it is revolutionary.

There is also a dilemma - to teach and support one device thoroughly, or to give a broader view of less depth. For financial reasons we've taken the former course and have specialised on just one device, the TMS 9900.

It is hard to measure how effective teaching is - the least we can say is that few students are put off by the ten hours of lectures. Moreover a one-week course we have run four times on the TMS 9900 has been consistently well attended. This

Britain's Premier Exhibition of

COMPUTERS, PERIPHERALS,

MICROPROCESSORS, TERMINALS

AND SYSTEMS

Wembley Centre, London

November 8 to 10, 1977

10 am to 6 pm

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Nor do we indulge in esoteric activities; we've resisted the temptation of microprogramming and multiprocessors. Instead we've concentrated on more useful things such as an intelligent interface to make an incremental plotter behave like a Tektronix display and the software interface between the portable SDL Coral 66 compiler and a Texas Instruments ope-

rating system.

We feel we've got things about right so far, though we are well aware of the need for us to Rese.

Rese.

Coleshill Street, Birmingham, B4.

September 22) is certainly very

described NDPCAL as an "or-

thodox and somewhat insular"

One of the particular features

of NDPCAL is that from the first

it broke away from the orthodox

industry a decent return in exchange of their taxes. Incidentally, where is indust-

We have considerable resour ces but all too often industry prefers internal empire building Any company (with or without liquidity problems) who wishes to use our resources for microprocessor support should consider getting in touch.

ad nauseam in the US at that

time, and still much in evidence

CAI (Computer-aided Instruc-tion) is the orthodoxy, at least in

the US, and it is to the great

credit of Richard Hooper and his

programme committee that the NDPCAL had the vision to be

there to this day.

BILL DAVY Research Assistant University of Aston,

## **Printouts** of King of rock'n roll

your article on a computer program whith altered the facial characteristics, on printed outcharacteristics, on printed out-put, of Groucho Marx, so that he finally looked like Elvis Presley

(CW, September 1). Following the recent death of Elvis Presley, I have received Eivis Presiey, I have received requests for a computer printout similar to the one just mentioned. Would it be possible for any Computer Weekly reader to put me in touch with someone who could supply me with a few copies of an Eivis Presiey printout?

M. LEECHMERE 5 College Road, Birmingham B13 9LS

unorthodox by aiming at the wider context of CAL (compu-ter-assisted learning), of which

CAI is a subset.
From this low-profile, lear-

ner-oriented approach, often

using small-scale simulations, came the possibility of using

small and relatively easily

affordable minicomputers fo

much of the work, often under

the direct control of the teachers

concerned rather than accessed

via the bureaucracy of a large

As a result it was possible to

finance the whole of the thriving

UK programme of some 3

projects for rather less than the cost of a single Plato system.

I should emphasise that my

criticisms of CAI do not apply to all US projects (Alfred Bork at

the University of California, Irvine, would be a notable

exception, among others), but it

CAI systems form the main

stream of US activity in this

other work that they were able

to learn from the successes and

Finally, aithough Mr Barker is

example, Plato and TICCIT, is

should be pointed out that most

of this is concerned with their

technical implementation in

hardware and software. Relati-

vely little is available concern-

ing the educational evaluation

of such systems, except in rather

commenting on subjects published in Computer Weekly, or on original topics. All letters

must be accompanied by the writer's name and address, not

**ROBIN SHIRLEY** 

narrowly financial terms.

Physics, University of Surrey,

the possibility of using

Logica (CW, March 11, 1976). The first part of the project, a feasibility study, was funded by the government to the extent of £60,000, but the project got no Why we're not so insular . . .

One of the problems was that the cities were not over-willing to co-operate with each other.

In future the 25,000 people

one of 16 district offices, each of which is being equipped with an

ICL 7502 terminal system serv-

ing two display units and a

The 7502s are being linked to the city's System 4/72, which holds details of applicants' circumstances and of the hous-

The system is one result of

computerised houseing ma-

nagement project started by six cities, including Manchester,

with help from the consultancy

ing available.

waiting for council accommo dation or for a transfer will go to

## Ferranti on the move

THE Military Systems Division of Ferranti has moved home from the company's factory in Wythenshawe, Greater Manchester, to a new location four miles away in Cheadle Heath.

The new home will house design, development, systems commissioning quality assurance, manufacturing and sales operations, while the Division's service department will remain at Cairo Mill in Oldham.

The new address for the Military Systems Division is Bird Hall Lane, Cheadle Heath, Stockport. Tel: 061-428 0771.

#### could hardly be denied that large 2960 for area. As for the charge of insularity, it was because NDPCAL and trading group

INTERNATIONAL shipping transport and distribution company, Ocean Transport and Trading, has replaced its ICL 1903A with an ICL 2000 at its Liverpool headquarters.
The new machine will support

i terminal based network which is being installed at various sites in the UK, and which will be used to extend management planning facilities and to imple ment some new systems, such as a company-wide management information system. It will use

#### **Prime shared**

A PRIME 400 has been bought ointly by Distributed Duta Processing and Systematics DDP will use the system to by MacArthur Cunning expand its services to scientific and engineering users, while Systematics International will develop an online database of marketing statistics marketing statistics,

money," he said.

Ballan was previously with

Bellan was previously with

Telex. where he says he put the
company's bureau on a sound

## administrative congestion at the city's town hall, as housing applicants will no longer have to go there to find out how far their application has passed through the administrative **NEWS IN BRIEF**

## **Tearing down** the walls of mystique

Speeding council

house allocations

A COMPANY which sells smell office computers over the counter from a shop in Carshalton High Street in Surrey has been formed by two ex-NCR men and the former London branch manager of Logabax.

The company, Data Systems Electronics, said that small systems such as the Logabax 2010 "cry out for a down to earth across the counter approach to

The firm hopes that it "computer shop" approach will "tear down the walls of mystique, buzzwords and complex ties which normally face the first

THE time sharing services offered by the US bureau Boeing Computer Services have been upgraded with the addition of a ourth IBM 370/168 at the company's centre in McLean Virginia. The services, which include APL, are available to UK users via the company's UK subsidiary, which also runs at IC1, 1904A in Watford, Herts.

APPLICATIONS software for the distributed network ordered by Shell UK Oll from Min-Computer Systems (CW, July 21) is to be developed by CAP. To help curry out the work, CAP has installed a Micos system comprising a 32K byte processor, 10M byte disc drive and four VDUs, in its London offices.

RECORD sales for the financia year ended June 30 have been umounced by Technicare Corp. the parent company Ohio-Nuclear, Sales for the year were \$164 million (£94 million). up 76% over the previous year, with \$125 million (£71 million) of this made up by Ohio-Nuclear, Technicare's medical diagnostic imaging subsidiary.

HAVING established a sizeabl user base for its Logout and Boost products in the US, the London-based software house Macro 4 is releasing its Speed disc processing aid on the US market. The company is also reported to be considering an export venture for at least one popular set of software products from another UK company.

A NEW data preparation and computer supplies company called Excel Data has been formed been formed.

#### SOME OF THE FIRMS YOU WILL MEET

May Baucess
Systems
Ampet 8 8 Limited
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(closing 4.30 pm on the last day) The seventh year of this highly-successful specialised exhibition. An ideal opportunity to meet the suppliers of every kind of computer hardware and service. Compec '77 is sponsored by the major specialist publications, "Computer Weekly" and "Data Processing", and is organised for them by lliffe

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It Lubs (Edit)
Limited
Industries
Indu

A free pre-registration ticket will be sent you on receipt of the coupon. Registration at the door without an advance ticket will cost £2.

their supported projects were well informed about US and failures of the groups who did the initial work in this field. correct in saying that a great deal of information is publically available on such systems as, for

# 

Room 821\_Dorset House Stamford Street, London SE19LU.

Please send me. pre-registration tickets for Compec '77 at the Wembley Centre, which will entitle the holders to free entry if fully filled in with the name and address of the visitor. (Without pre-registration, tickets obtained at the disor

Post or Zip-code.....

been formed in central London. where high office and staff costs have forced other companies into the suburbs and new towns.

The bureau, Delta Computer Services, believes that its main customer targets - companies with their own programmers looking for machine time — and the fact that it runs an IBM 360/76, will enable it to survive the economic problems of runn-

OS machine time in central London, said Royston Ballan,

Lowndes-Ajax is out at Croy-

"Our computer is a 360/75 which, being an old machine, has already been paid for, whereas a bureau cannot make a 370 pay: A 370 costs more to install and run. At the same time our 360/75 gives as much power as a 370/155."

ing a business in central London. Ballan added that Delta was "There is a definite need for not specialising in particular OS machine time in central application areas but was sim London," said Royston Ballan, ing to provide complifer power.

# IBM Series/1-Some flexible solutions for your distributed data processing problems

# Which you choose is strictly your own business.

For the DP Manager who is looking for reliable, cost-justified solutions in his DP environment, the IBM Series/1 offers big performance at a low price.

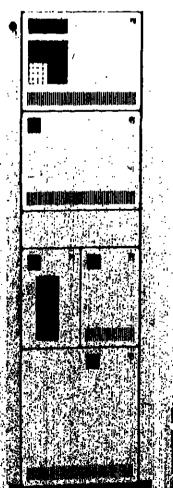
There's a wide choice of building blocks to choose from—so you pay only for what you need.

Processors, storage devices, sensor I/O, display stations, printers, communications adapters, customer device attachment features -you choose only what your particular circumstances require.

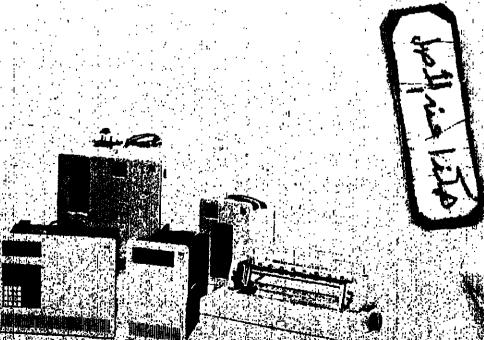
And IBM offers software quickly it can be installed support, including PL/I and Fortran, and a real-time operating system—all backed by IBM's service.

Its flexible communications capabilities enable the IBM Series/1 to accept an important role in DPas both a network controller and remote work station. And you'll be surprised how and working.

If you'd like further details of IBM's Series/1 systems (prices start from around £7,500), call Rick Ackland Snow at: IBM United Kingdom Limited, General Systems Division, London Wall Branch, 40 Basinghall Street. London EC2. Tel:01-628 7700, ext. 2661.



IBM United Kingdom Limited



THE PROPERTY OF THE PROPERTY O

AS part of its expansion programme, Argos, the Green Shield stamp company's catalo-gue showroom chain, is to install computer systems worth over £200,000 at the 20 new showrooms being opened later this year and early 1978.

Each showroom will have a Comet 1608 computer with 24K main memory handling up to eight Comet terminals. These terminals have calculator-like keyboards and both they and the computers are made by Comet Computing Systems of Bedford.

With the new system, sales assistants using the terminals will make stock level and price

The stock level of any item is displayed on the terminal together with the price, and the assistant can key in the quantity the customer requires. This order is then printed out in the stockroom instructing any of



ment system, Scrumpi, has been introduced by Bywood Electronics. Known as Scrumpi II, the system offers several enhance-

ents for the old price tag of £55.

The main differences between Scrumpi I and II are the addition of 512 bytes of PROM and 512

external connections, and the use of the National Semiconductor.

SC/MP II microprocessor (CW, August 11). One of the edge

ors carries the busses for

SC/MP II mi

Dr Mike Smith, Argos director of marketing (left), and Rex Ingram of Comet, talk with one of the sales assistants at the Argos catalogue

the storemen to pick up the item and load it on a conveyor belt. tion will then be available to the store management as stock movements can be followed, and one future application could be routine stock re-ordering from the main warehouse by each

By using this system, Argos is hoping to minimise costs by gaining a better picture of its constantly changing merchan-

# £750,000 LesterNet order for Burroughs

building societies may look yet each one takes a completely autonomous and individualistic view of the best ways to meet the requirements of its customers.

Attribugh still programmes in the same way as Scrumpl I (CW, September 8), using mode and data switches, Bywood is also working on the development of a keyboard and display unit that will act as the I/O device for

Scrumpi systems.

Based on the use of a National

clock chip, used primarily for its display and driving capabilities, it will offer the potential of a high

complexity time control system, capable of triggering up to 160 different command signals in a 24-hour period, which could make it well suited to many industrial applications.

While pioneering societies like the Britannia believe that real time passbook updating at branch counters is the shape of

The Leicester is installing a nationwide network of VDUs, one at each of its branches, but has decided against real time file inquiry and updating on its twin Burroughs B3700 installation at

movement, others like the

Leicester believe that offering a

comprehensive savings bank

service is less important than

providing an efficient savings

and loan service as cost effect-

Oadby, Leicestershire. Instead, each day's transactions will be transmitted throughout the day to the mainframe, but will be checked and batched up on disc for overnight processing; online file inquiries will be answered with the previous day's balances.

"A real time passbook updating system would be much more expensive than we are planning, and real time file updating would also be much more demanding of systems effort," Paul Rylett, computer manager at the Leicester told Computer Weekly, "We simply don't believe that the extra cost is justified at present."

In order to implement the new network, the Leicester has placed a £750,000 order with Burroughs for 170 TD 833 VDUs. three B774 front end processors and 192 TA 2461 modems, which

Post Office approval.

The Society estimates that over a five-year period is modern cost will be 50% of what it would have been if it had rented 2400 bps devices from the Post Office, it is Burrough's first UK order for the TA 2401.

Two of Burroughs' special software aids are being used to implement the Society's conmunications system, called

Burroughs' Network Definition Language will be used on the B774s for generating the operational software, and will ommunicate with the Burroughs Message Control System on the B3700s. The B3700s are expected to

meet the Society's requirement for two to three more years, with the addition of further memory and peripherals, after which there will be a full evaluation of hardware available at that time The Leicester Society wa

formed by an amalgamation of the Leicester Permanent and th Leicester Temperance Building Societies. The Lelcester Pem ment was the first to install. computer in the early 1960s, an switched to a B3500 in 197 while the Temperance used th Centrefile bureau, running it files on IBM hardware; the have all now been transfered:

# Shape of devices

FURTHER information about the eight-bit single-chip microcomputer and 16-bit "number a pre-scaler for timing and even crunching" micro were given kest week by Ralph Ungermann, executive vice-president of Zilog, when he spoke at a seminar at the Lorch Foundation, near High Wycombe.

The Z-8, eight-bit device (CW August 4) is now scheduled to appear in quantity in March. Intended primarily for standalone applications, particularly where system memory requirements are small, the device has an on-board memory capacity of 2K bytes of ROM and 96 bytes of RAM, together with 32 1/O lines.

Seventy-six bytes of RAM are available as general purpose read/write memory. The 32 1/O lines are formed into four ports, in which reside the remaining 20 bytes of RAM. Of the four parts, two are constructed as full eight-bit units, while one is four-bit in four-bit out. As the I/O ports contain the remaining registers, the device allows several data manipulation functions to be carried out in the ports rather than the other

internal registers. All 32 lines of I/O can be used for external memory addressing, offering a total capability of 128K bytes, equally divided between program and data storage. In addition, two of the lines can be used to form a simple universal asynchronous receiver transmitter, UART, Other features include an

# Three more reasons why ITT Business Systems means business.

These are the three latest additions to an already extensive range of data communications products from ITT Business Systems.

Individually, they offer you a new and extended capability based on the latest computer technology. Each of them can help to make your life easier and your business more efficient.

But collectively they have something more to say – they demonstrate that ITT Business Systems really does mean business.

That's important because it means there is one supplier of computer peripherals large enough to lead the way. Asupplier, moreover, with the technical resources and nationwide sales and service organisation to provide a real competitive

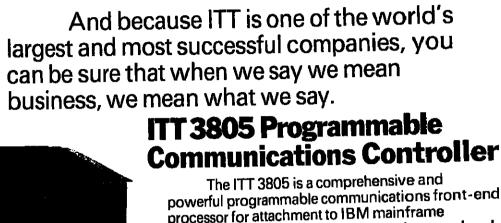
### ITT 3630 Multifunction Intelligent Terminal System

The ITT 3630 is an intelligent terminal system. It can be used as a remote batch terminal or, simply by changing a diskette, as a data entry system, or an interactive terminal.

These functions are supported by advanced, proven software-DEGEN. This allows you to generate a data entry and transmission system. It is designed to enable more officient data input and

reduced software development costs. System control can be located just where

The ITT 3630 is a quiet, easy-to-use system designed to look good



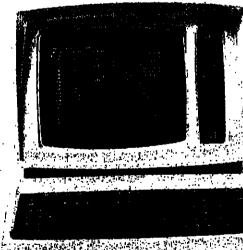
powerful programmable communications front-end processor for attachment to IBM mainframe computers. It provides flexible network control and enhanced networking without the need to change tried and tested applications or mainframe software.

The 3805 will also allow greater choice of communications techniques in the future and can show significant savings in network costs.

ITT 3230 Visual **Display System** 

The ITT 3230 Visual Display System has been specifically designed to meet all the data communications needs of the Systems Designer, the DP Manager and, of course, the operator. It's very versatile, good looking and above all, cost -effective. No equivalent system offers so many features at a comparable price. The ITT 3230 with its diskette attachment is particularly suited to file enquiry and update although

many will see it in a data



Other ITT Business Systems products include: ITT 3802 Terminal and Communications Controller ITT 3330 and ITT 2300/8 Data Printers ITT 3280 range of 3270 compatible Displays and Printers · ITT 2000 series of Modems.

> ITT Business Systems, Publicity Department, FREEPOST, Brighton, Sussex BN1, 1ZX.

TT Business Systems L. L. L.

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through extension in the command chaining logic.

String extension techniques have been enhanced and the sort has been finely tuned for VS through use of monitor

(as provided by IBM Release 34) is now available and, under DOS, support for multiple input devices (tape and

Finally, DOS users may now profit from optimum work device assignment through automatic resolution of work I/O device conflicts.

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reduction in I/O accesses

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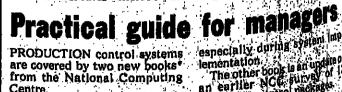
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DATAPRO, a well-known American research organization, conducts a survey each year to determine the most valued software packages in use in the USA. To our knowledge, CA-SORT 77, a two-time winner, is the only European package to achieve this coveted award.





PRODUCTION control systems are covered by two new books from the National Computing Centre.

The first, part of the Computerguide series is a practical guide which identifies problems and helps managers to get the best from their systems.

The guide is needed because the NCC says that, despite long experience in the field, industry still makes the same mistakes.

interrupt system, two timers are counting, and a single five-vol power supply requirement Plans are in hand from Zilog for the introduction of an adder machine for the MDZ develop-Similar plans are afoot for the

Z.8000, the official designation for Zilog's oft-predicted 16-bit microcomputer. Currently planned to appear next June, the design would appear now to be settled, as the layouts for the production masks are being

Ungermann, without being drawn too specifically, offered the seminar delegates an the seminar deligated interesting overview of the device. However, as already predicted (CW, October 13), its throughput capabilities will be broadly similar to that of the broadly similar to that of the PDP-11/70 minicompl

compatible at assembly language level with the Z-80 device. hardware multiply and divide. Available in either a 40 or 48 ph Available in either a 40 or predicted package. Ungermann predicted that in the latter version, it would be possible to directly address up to 8M bytes of memory. On the question of price, Ungermann syould only state that it would be compellitive with the LSI-11. CPU from Directed.

# Tim Palmer and Robin Webster report from Birmingham

# The benefits of electronics in the office

"THE impact of electronics on word processing systems were tems on show emphasised their the business industry has been quite extraordinary," said the Duke of Kent when he opened the International Business Show at the National Exhibition Centre at Birmingham last week.

"We hear a lot about improved productivity, but it is useless unless it is supported by proper administration. Foreign customers are quite unforgiving about mistakes and quite rightly

With office and commercial applications getting top priority

shown by several companies and interest in the show confirms this opinion. Attendance was up on previous Business Efficiency Exhibitions. For the first four days of the last BEE in 1975. there were 14,819 visitors, compared to 18,212 for the first four

One of the focal points was ICL's Computer City which dominated Hall 1. This received a great deal of attention from visitors, including the Duke, and

days of the IBS.

**COMPUTER WEEKLY** 

The following special supplements are due to be published during

NOVEMBER

**NOVEMBER 3** 

**COMPEC PREVIEW** 

+ Bonus Preview

Following the mounding success of Compec at the Wembley E-hibition Centre last November, the show returns to the same value near month with an even bigger line-up of companies eagor to promote their wares. The show runs from November 8-11, and will be the subject of a supplement in Computer Wackly on November 3, where Computer Weekly as sponsors and owners of the show will be exhibiting and 5,000 artifictional copies of the issue will be distributed.

Topics to be covered include how microprocessors assist the

Topics to be covered include now microprocessors assist the periphanal manufacturar, how users are being used to change intelligent terminals into distributed processing systems, whither goes the mini-computer? threat from micros? are minis taking over from mini-fames? marketing low constrommercial microprocessor systems: (imitations of microprocessors, why U.S. exhibitions are more exciting the LEE of the constraints.)

**NOVEMBER 10th** 

INTERNATIONAL

**EDITION** 

The November usue of Computer Weakly International will feature a detailed report of System 77, which was held in Munich, Germany, this month. Together with all the latest news and developments which has

occured during the post month in other parts of Europe and the U.S. With an overall distribution of over 98,000 (U.K. 78,685, Overseas 19,138) this issue will provide an ideal opportunity for export minded companies to display their products, equipment and services to this unique nucleone of decision makers throughout Western Europe.

**COMPUTER EDUCATION —** 

**NOVEMBER 17th ISSUE** 

Computer education is not just teaching fifteen-year-olds the difference between a punched card and paper tape or showing them how to program in Basic.

in our schools, possibly the biggest education job still has to be done

Our education supplement on November 17 covers both sides of the problem, with the spotlight first going on the Inner London Education Audiority to show what can be done at school level then articles on the government's TOPS training scheme and the National Computing Contro's Threshold training scheme for school leavers

There will also be a look at the problems of educating the and user about

the firm's computer department. And details will be given on the Plato computer assisted instruction system now being introduced to Europe by Control Date. Read Computer Weekly on November 17 and learn

LONDON AND WESTERN

Staphen Messures 01-261 8293, Tany Kaminski 01-281 8022, Stuart Moore 01-261 8109, Lloyd Collins 01-261 8767

MIDLAND

Ken Parrott 021-356 4838

For although, happily, computer aducation is starting early

operations by "unskilled users". Monotype International used

the IBS to launch its Monotype 80 system. Manufactured by the Ontel Corp in the US as the Ontel OPI terminal, it includes an intelligent VDU, a 45 chps daisy wheel printer, and a dual floppy disc drive. Designed for stand alone or distributed processing mode, the system offers a range of printing facilities including superscripts and subscripts. continuous or broken underlining, file merging and proportional spacing. There is a standard software package, Mono-

munications emulator packages. Altergo Computers introduced Formula 1, its word processing system based on the intel 8080. To promote this racng driver Divina Galica and her ormula One racing cur were eatured on the altergo stand

type can also supply packages

using Basic and Sabcol, a busi-

ness oriented language. There

are also data capture and com-

One of the more impressive of the small business systems on offer was the Jacquard J100, marketed in the UK by Comnuter Ancillaries Ltd. It is one of the first business systems to be based on a 16 bit microprocessor, rather than an eight-bit one. The device it uses s the National Semiconductor

The J100 was demonstrated running word processing on one quiry and order entry appli-cations were carried out simul-

After opening the show the Duke of Kent toured the stands. Here he watches as a futuristic secretary on the Pitney-Bowos stand takes part in a demonstration of a computer-based mail franking machine. When the nachines need to be refilled the user can get the moter reset by dialling Into the Pitney-Bowes data centre and entering his account number, mete number and the register readings. These details are checked for validity and a voice-response system then issues a setting code for the meter. The code sequence is random to ensure security.

taneously at others.

The configuration shown, including 64K 16-bit words of memory, 12 Megabytes on disc and two printers, would sell for about £40,000 including the operating system and text processing software. Programming is in extended Basic, and disc capacity can be expanded to 96 Megabytes, which makes the system attractive to people run-

ning heavy text applications.
One user, Database Technology of Aldershot, is using a J100 to provide a text processing bureau service, and two Lloyds underwriters are making use of the facility for preparing standard letters alongside standard data processing applications.

showed systems from the Mael

range, which still account for half its annual business of about £3 million; the other half is split equally between Jacquard and CAL's M-ONE stock control system, which was designed in-

The J100 is the fastest growing sector of Computer Ancillaries' market, and more have been sold in the UK than any other European country Jacquard looks for Europe-wide sales of 90 to 100 by the end of the year, and Computer Ancillaries expects to sell 50 in the UK next year. Five software houses have bought Jacquard systems and are developing

applications packages on them. The M-ONE was not on show at Birminghum because Computer Ancillaries has sold all of his year's production and much of next year's.

NCR showed the new 8250 small business system, which is based on a general-purpose 16bit minicomputer. Compared with the 8200, which it succeeds, it has an enhanced transactionprocessing operating system, IMOS III, which features dynamic allocation of memory where IMOS I on the 8200 operated on fixed memory partitions. The present software supports up to seven VDU or printer terminals, and a new

soon, will extend this to 15. Cassettes are the preferred medium for program loading, but floppy discs are an optional

come in 4.9 or 9.8 Megabyte units. People wanting to run the B-series batch operating sys tems used on the Century 75 and 151 can do so on the 8250 in emulation mode, running programs in Fortran, Basic, Cobol 6 and Neat 3. Programming under the native IMOS III operating system is in the NCR standard. Cobol 74.

There is one other machine in the series, the 8230, but this is simply an 8250 with slower execution speed, configured thus for marketing reasons. IMOS III is also the native

Carpets

and the

cost of

tea

in most respects the National Exhibition Centre is an excel

lently appointed show centre as most exhibitors at the Inter-national Business Show would agree. But it would have looked

comparably better if the sister

had been covered with some

form of carpeting, and a few pots of shrubs and flowers could have been used to mask some of the unsold space. It would also have helped if the stand plans displayed at points around the show had included the stand of sublibilities.

names of exhibitors as well as

A thing that stunned

on Monday to set up their

stands, and returned on the

opening day. Tuesday to great visitors, was the astonishing

nflation in the price of refresh-

Overnight the price of a cup

of tea rocketed from 6p to 12p.

The explanation was that the

workers who set up all the

shows at Birmingham are not

propared to pay 12p for a cup of

duced price. Unfortunately

many exhibitors staff and

visitors were not prepared to pay 12p and so went without.

4.9 Megabytes, and fixed discs

ors who were at the NEC

operating system for the 8400 series, which succeeds the midrange Centuries, and it will also run on the smaller Criterion 8500s, whose native operating system is Virtual Resources

Executive, VRX.

Computer Technology
exhibited a bank of VDUs, all linked to an 8050 minicomputer. and visitors were invited to put the computer through a number of applications all running in multiprocessing mode under the Modus operating system. Datasaab gave the new mag

netic ledger card version of the D12 desk-top accounting machine its first UK airing. It is sold mainly through agents and costs about £9,000. The company also demonstrated a three-site release due to be introduced telephone order taking system implemented on the DIS for a West Country motor tyre stock ist. The specially written software costs about £10,000.

# **Visual Display Units**

tutorial seminar organized by the British Computer Society The book is intended for computer users who already employ

VDUs or plan to use them to enhance their system, it will be of equal value to management in their basic decision making, and to the systems analysis and 215 x 155 mm / viii + 212 heget. Hustrations / glossart / index Cluft / ISBN 0 967851 65 5 Price 27.00 net (\$14.00) processing menagers who put those slops into practical effect.

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## The secrets of Enigma

the world's first programmable computer (CW, July 28), to the Allies' victory in the Second World War should become dearer now that secret German messages decoded by the UK computer have been made available for public study at the Public Record Office at Kew,

West London. The messages, obtained by secret agents and by intercepting radio transmissions, are expected to shed new light on the Battle of the Atlantic and D-Day.

Pactel reports

aimed at manufacturers of computers and telecommunications equipment are being launched by Pactel.
Costing \$995 each, the reports will-provide information and analysis for short and long term market planning. Each will munications equipment are market planning. Each will cover a separate section of the industry, and the first, Computer Mainframes, is due

A NEW annual series of reports

out this month. Other subjects, following at monthly intervals, will be microcomputers, minicomnuters, small business systems. computer terminals, data transmission equipment and business communications.

#### Nixdorf picks Z-80

LATEST long term Intel 8080 user to switch to the Zilog Z-80 microprocessor is Nixdorf Computer, which is using the Z/S0 in perioheral controllers and as-CPU in some of its terminal sys-

Last month microcomputer ploneer R2E of Princer announced that it was switching to the Z-80. "The Z-80 hars at larger instruction set that the 80%), is five to six times more powerful, and only requires one power supply," Thi Trutong, R21ounder and president, told Computer Weekly.

OP SPOT

over the same period last year. After-tax profit, at £269,495, shows an even more impressive increase of 144%. This growth, claimed Hughes,

**Exports now major** 

is due largely to the increased enthusiasm by users in general for two areas in which Logica has long been accumulating expertise - the hardware-software interface and communications and linking technology. Consultancies which, until

Phillip Hughes declined to be tied down to specific further now, had specialised entirely in plans for Logica subsidiaries. software were finding themselthough be admitted that further ves thrown into hardware offices were likely to be set up, -design through the advent of the There were limbs that the next microprocessor, with its more area to be approached in this untimate connection between way would be West Germany. software and hardware archi-At present Logica has subtecture, said Hughes, Logica's sidiaries in Benefitx, where its existing hardware design experholding company is also situtise had placed the firm well to

ated; Sweden; the US; and meet this "revolution". Australia, The company is also "For us," he said, "the advent handling projects in a variety of of microprocessors is just a other countries; including the -further link in the chain. In the

well as in our own internal developments.' Logica's present strong

overseas position is underlined by Department of Industry figures, which indicate that Logica UK's exports of professional computer services account for 25% of the UK's total exports in this field. Consideration of exports na-

Rail, Reuters and Euronet, as

turally raises the subject of the National Enterprise Board's Insac subsidiary. Although Logica admits that "we cannot be but interested in Insac," Hughes added that the company is at present "in no sense negotiating" to join the venture, "Looking at our figures." he added "We don't really need the funds."

# Altergo bid for business market with Formula 1

Progressing towards ever smal- linked to a variety of mainler systems. Altergo Computers frames in a distributed prolaunched its first micro- cessing configuration. computer last week at the International Business Show. Known as the Formula 1, it is aimed at the word processor. general accounting and comunications markets

Like Altergo's minicomputer configuration the Avenger (CW, June 16), the Formula 1 is built of components from several sources. The central processor is an Intel 8080, and the configuration has a keyboard, a visual display unit supplied by Motorola, a twin floppy disc unit from Shugart, and a 40 chps daisy wheel printer from Diablo.

Software from Altergo includes word processing programs, sales ledger, payroll and time-recording systems. There is also an IBM 2780 emulator, al-

The combination of word processing and accounting software on the same machine businesses and professions needing to prepare standard documents.

Time-recording, enabling professionals such as accountants and solicitors to record the time spent on each of a variety of simultaneous assignments, is also available. Timerecording systems have proved very popular, and have already been implemented on a number of minicomputers.

Additional software will be provided for the Formula 1 as users express a need for a particular application, says Altergo.

lowing the Formula 1 to be Formula system is £8,500.

#### **NCR faces Century suit**

has been brought against NCR have had hardware and other problems with a Century 200.

The user, Tri-State Engineering, a manufacturer of wire mesh containers, says the \$3.2 - a Univac 9600.

million includes \$322,075 for the cost of the Century 200 and \$1.5 million for loss of profits, loss of service bureau business and for additional borrowing costs. Tri-State transferred to the Century from an 1BM 360/20. It now trues

#### AJ's high quality matrix printer

matrix printer terminal intro- 36 month leases. duced by Anderson Jacobson. high level of print quality, at speeds up to 120 chps. Called the AJ860, it costs £1,995 in its basic

A WIDE-CARRIAGE dot- form and is available on 12, 24, or

The 860 cau run ons or off-line. has been designed to provide a at 10, 30 or 60 chps and options include graphics capability, and the 120 chps facility which costs

#### Logicals, turnover for the year ended June 30 is £6.842,915. This microprocessors in systems for SyncSort To get the best out of an installation one must define the users and understand their

The most widely used OS and OS/VS sort worldwide, with more than 1,600 users and 43 % of the U.S. market.

#### Because:

Syncsort saves machine resources:

- ★ 33 % reduction in Elapsed Time:
- ★ 25 % improvement in background performance:
- ★ 31 % reduction in True CPU Time:
- ★ 32 % reduction in I/O activity:
- ★ 70 % reduction in disk-space as measured in disk-kilobyte minutes.

For full facts and actual case histories call:

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**Products** More OUTPUT from your INPUT



NORTH AND SCOTLAND Herry Aiken 081-872 4211 stand at the show was without a doubt the shining aliver Stop Press: Computer Weekly continues to publish more product and recoulment advertising and has a higher fully requested A.B.C. (Audit Bureau Circulation) of 76,001 then any other U.K. computer publication. Dominant stand at the snow was without a doubt the shining aliver computer City of ICL, which occupied the central site in the computer hall and to which visitors were welcomed with the smiles shown here. Lest snyone should criticise the fisgahip of the UK computer industry for such a display of opulance, it should be pointed out that the stand will become the name representation of the permanent showers for the company's, products at Hapover, Fair in West Germany's where it will also be among the most eyedstolling smillofts at the show. e Addhional 19. 38 regular readers in Western Europe via the INTERNATIONAL EDITION which is published the 2nd week in every month excluding August And December.

Edited by Derrick J. Grover Chairman, British Computer Society Displays Group Visual display units provide ong of the contents

instead means of interaction with a computer, and they are being employed in industry in ever increasing numbers. Their applications are wide-ranging, including attrine-real reservations, stock-control systems, information retrieval. stock-market and insurance quotations, text editing and information updating. .. VISUAL DISPLAY UNITS is based on a

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Review and treads Derick (inger,
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or plain guide BEFORE taking on the Op ordinator between the user

ces industry placing increasing

emphasis on the importance of

the export market, the publica-

tion of Logica's latest annual

results show the company's

overseas business overtaking its

business in the UK. Overseas

turnover now represents 51% of

intention to continue this

overseas expansion. Chairman.

The company emphasises its

Logica's total dealings.

Spot mantle I endeavoured to outline the optimum way of organising and running the omputer room. In "The Plain Man's Guide to the Computer Room" (CW, September 8), 1 discussed topics such as communication, throughput. operator training, and general methods of encouraging and

Narrow view...

enhancing efficiency. Now, David Flint, a systems analyst at the Post Office, has taken me to task and says I

slights those jobs that are not online, and it obstructs communications between operations and users. It also NEGOTIATIONS are in hand Grenville Morgan, the poly's encourages the users. It also negotiates services, director of computer services, director of computer services, and the for the puting as an end in itself rather than as a way of meeting users'
feeds it is time that operations units abandoned this ghetto approach'. Indeed many have already done so," he adds.

bstruct communications operations and

and the computer room". But Mr Flint also disagrees In my view operators should be able to concentrate fully on

their task - operating the system. If they are continually interrupted by interference from outside the computer room, their performance will be diminished. Any communication bet-

ween users and the computer room should take place via the job control section. In this respect good documentation is of presented "a depressingly narvital importance. Such dowhich one defines the user,
tow, and dotow row, and depressingly nar-mon view of the cumentation can relate the believe a high level of technical mon, view of the responsibility of the computer operations and can inform the operators schemes and financial incenturation."

cumentation can relate the penevering operators of each user expertise, good training particular needs of each user expertise, good training expertise, good training operators and financial incenture operators can only. He goes on. "The danger in of such things as priority deadlines and any special user operations function is that it slights those jobs that it of such things as priority tives to operators can only improve the service provided by operations.

# Sheffield shifts

I do not see how Mr Flint drew the conclusion that the approach conclusion that the approach conclusion that the in the humber of long running of the operations staff in the humber of long running of the operations staff in the humber of long running of the operations staff in the humber of long running of the operations. Pproach I suggested could jobs. The department provides near future obstruct and are suggested could jobs. users operations and the polytechnic and the receive a 14% shift anowance, the role of the job control jobs are mainly those involved should they agree to go to swion is basically that of co- in engineering and chemistry three shifts.

#### Dealing with Mr Flint's criticism that my article "encourages the view that computing is an end in itself", I was trying to establish criteria by which an operations depart ment could be judged. I said

with my definition of a user as "busically, someone who is buying machine time". He says "this is only really true of the user we are most familiar with - the programmer. And even the programmer is buying ser-vice as well; the correct loading of tapes and stationery and

appropriate action to clear transient failures for instance". Regardless of the manner in

lation at Sheffield Polytechnic development of the depatt.
The present shift system ment, says that due to cuts on provides cover from 8.40 am to local government expenditure,

encourages the view of computing as an end in itself rather on the IBM 370/135 instalthan as a way of the department o 9.40pm, Monday to Friday.

The need for three shifts has upgrade the hardware and will not be able to increase the size.

a service to every course run at At present the operators the polytechnic and the receive a 14% shift allowands

# 

Damage to data is the biggest threat

modification and destruction of data are by far the biggest threats to computer installations. This is clear from a study by the Stanford Research Institute of 355 cases of

malicious and accidental damage at computer sites. The study found that 27% of cases involved the insertion. modification or destruction of data and program files held in a computer system and 24% involved data stored outside the

Unauthorised use of computer time was next with only nine per cent and vandalism, forced entry and theft of hardware, software eight per cent of cases.

was involved in 90% of cases, with both accidents and natural disasters accounting for as little

types of safeguard and found that there were far more possible safeguards against data manipulation than against other types of damage. But at the same time the study

found that only 20 per cent of what it called highly-effective safeguards were also broadly applicable, and that many were only applicable to a small area in a risk category.

#### 'It's too **USER VIEW** risky saving money' spending cost is not of prime

importance."

As well

unprofessional, this attitude

could lead to a vicious circle

with the likes of Amdahi

naving trouble getting a foot in

the door, and the IBMs of this

world getting a stronger grip

And why should the data

processing manager worry

about what the company

going to think about him if its

plug-compatible machine.

bought on his advice, isn't a

great success? The DP

department's name is probably

mud in the company anyway

because of all those application

systems which were delivered

rushing out to get plug-

replace your mainframes? Is it

fear of failure? Or lack of

confidence in the suppliers? Or

have IBM and the others done

such a good sales job that you

iust haven't thought of it? User

BUILDA CLEAN

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When you hear it, you II believe it! Our design measures

19in x 12 x 9in, and uses two drive units—a KEF type B200

compatible machines.

compatible machines

late and keep going wrong.

IBM-compatible mainframe manufacturer Amdahi has chosen the UK as one of its two main European bases because it sees the UK as the best potential market (CW, August 25).

But the attitude of the UK data processing manager could prove this argument wrong. according to one major UK

The user, who took part in the Computer Weekly survey on attitudes to plug-compatible processors (CW, October 6), said, "If we buy an Amdahl processor, and thus save our company money, we get no credit. And if it goes wrong we get jumped on from on high. So there's no incentive to move from IBM."

Another aspect of this attitude was pointed out by Bill Read, managing director of Univac (CW, September 8). He said, "US companies are much more cost-conscious in all areas and price is very important . . . The UK manager tends to take the Forum would like your views attitude that if it's the on buying or not buying plugcompany's money, his

was hoped that the safeguards would have fairly broad applicability within a violation category. However, the narrowness of their applicability within categories means that a The study identified different facility must employ a set of safeguards to protect against a particular type of threat, even though each of the safeguards

might be highly effective in its Most of the high cost safeguards relate to hardware, communications and to the physical security of the installation. The low cost safeguards tend to relate to procedures at an installation or

in the computer room. As the report says, "It is thus important to have a solid policy and procedural foundation for any programme to enhance computer system integrity. The moderate cost safeguards tend to relate to the system safeguards in the computer operations area, particularly to operations controls and password mechan-



of Verlipack's factories. The production of bottles, the testing and packing is all done automatically and the main hold-up in the past was the manual

# **Emulation keeps Belgian** glass manufacturer happy

WHEN Honeywell launched the Series 60 over three years ago, one claim made for the small to medium sized 64/20 was that it could run in G-100 mode, thus giving users of the General Electric computers taken over by Honeywell a chance to transfer easily to the new main Honeywell line.

Many of the early level 64 customers were G-100 users and one of them, Verlipack, a Belgian manufacturer of glass and plastic containers, is happy enough about running in G-100 mode to put off conversion to native Series 60 mode until it has sufficient resources available for

And not only has the company, part of the Franco-Belgian engineering giant Empain

 $\bigcirc$ 

its programs directly from its old G-138, but it has at the same time been able to take advantage of the 64/20's communications facilities and give its factories and administrative departments online access to the central machine.

"We use the G-138 programs unchanged on the 64/20," said José Schmitz, head of computing at Verlipack. "And most of the programs run 20 per cent faster on the 64/20 in G-100 mode than they did on the G-

138. "The emulation software takes almost 100K of memory, but the software is free. We also pay 20,000 Belgian francs, or £2,850 a month, for firmware."

The cost of running in G-100

prevent Verlipack from regarding program conversion as a top priority. In fact Schmitz has not even given a firm completion date for conversion. Verlipack is

immediately concerned with getting its six factories and eight main administrative departments online. It is notching up something of a first here, us it is the first user to link Honeywell's MTS 7500 terminal systems to a level 64 computer. The MIS 7500s are in the

factories and used to record information on staff working hours and on stocks. The transmission of data to the 64/20 in Brussels is done nightly so that files are always up-to-date. whereas formerly the data was sent manually, punched on to cards, processed and sent back to the factory for error checking. It was sometimes a week or even 10 days before stock information was recorded centrally.

A final word on the emulators came from Honeywell: as a spokesman pointed out, explaining the number of satisfied users running under G-100 mode, "We have been through a lot of mergers, what with General Electric and Machines Bull, so we have a lot of experience in

Their first—and last taste of independence

AFTER a brief spell of independence, UK users of the Texas Instruments 990 minicomputer have rejoined the main European users' association, TI-MIX. But having proved the point that they are a group in their own right, they are rejoining as the 990 regional group rather than as individual users.

The 990 users broke away from TI-MIX in the summer. arguing that they were hardwa-re oriented, while the 960 and

more for data processing and Dayy, added that the 980 group process control applications in TI-MIX would be the first (CW August 25).

The 890 users had their first we have achieved a remeating and last meeting as an doug arriging.

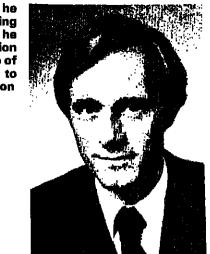
Not so long ago you could keep the end user at two-way communication can help both users and lecturing and publishing management posts he aticles, a key challenge.

Ha outlines the forces which can stunt the

Not so long and people talk about "user rule". DP. He offers guidelines for making end user spent nearly seven years in systems engineering and length. The specific and seven years in systems engineering and user specification has become a key objective communication pay off — and predicts that be- and communication work with IBM. Now he Enduser satisfaction and communication work with IBM. Now he fore long communication research techniques directs his own consulting firm Communication for the Dr. managers' armoury of manager Audit. A member of the International Institute of ment aids.

Laurie has worked for over 10 years in the management audiences on communication growth of user satisfaction — and shows how communication and computing fields. After topics.

Communications, Laurie lectures frequently to



# How to communicate with the end user

established DP manager faces these days it's the vital need to build end user satisfaction.

That end users form a growing army is a truism. That their taste ndependence is well developed we know only too well. The technology lets them pursue it and they are set to become DP's not so silent majority of the future. On their goodwill much

progress in DP will depend. Managing this new found user freedom is not easy. Decrying it may be a tempting strategy but in the end is a self-defeating one. For the end user's drive to inendence cannot be halted; it can only be coaxed into sensible channels consistent with corporate strategy for DP. The sound response is thus to focus on user service, not user control; user persussion, not user direction:

user compulsion. Such a strategy will be built gainst a background of rising emands from the end user.

and user communication, not

Meeting his needs and holding his goodwill will, therefore, call for quite outstanding skills. For, no matter how trusted the service, intensive the training and dedicated the support, users will tend to discontent. Once they grasp the potential of computing hey will demand more from it. Their complaints then will not arise from the service they have,

resources, facilities and usor needs.

publications, aids and reports. Track results against objectives.

**Managing user communication** 

ing similar problems are then able to ask questions and seek Users say the group provides valuable service. It enables them to make greater use of their software than would ntherwise be possible.

A page in which users can dir their of

**PROFILE** 

George 2

Group

THE George 2 user group, pert of the ICL Computer Users' Association, meets four times a year in London, Birminghamend Monchester. The meetings give the group's 170 members the change to exchange the second secon

chance to exchange ideas on software, with special amphasis on the George 2 operating

A typical meeting is divide

nto a number of sections, some

THE POST BOX: Members

are encouraged to express any problems regarding operational software. These can erelate to

software other than George 2

of the meeting so that advice

can be given from members

REGISTER: This is a file of

utility programs maintained b

Computer Services. These are available to members free or

charge and everyone

encouraged to contribute to the register. At meetings any new

THE REGISTER OF EXPE-

RIENCE: This consists of a list of people with George 2 software experience. It includes

information such as a descrip

tion of the installation in which

thoy are involved and the

applications supported. Any additions can be discussed and

members can be contacted advice is needed.

USERS' EXPERIENCE: Usin

are invited to speak about any

problems they have encounter-

ed and describe how they overcame them. Members fac

80FTWARE

and are recorded in the minu

system on the 1900 range.

of which include:

mable to attend.

leaves affecting day-to-day date of

Edited by John Kavanagh.

ICL represe the meetings, so direct commuhem and the users.

#### Tax forms

STATIONERY supplier PFC (Continuous Forms) of Cradley Heath, West Midlands, is now offering P11, P60 and P35 tax and National Health contribution forms as continuous stationery, with immediate delivery.

Typical prices for two-part 15 forms are £15.75 for 1,000 and £27 for 2,000. The one-part P60s cost £28.25 for 5,000, £39.95 for 10,000 and £140 for 50,000 The three-part P11/P60s cost £18 for 1,000, £38.38 for 2,500. £56,25 for 5,000 and £325 for the maximum of 50,000.

independent association last month. Afterwards the organiser, Bill Davy of Aston University, said, "Since & user group without Texas instruments support is of questionable value, we asked the Texas Instruments from seen lative at our inserting if representative at our meeting representative at our inner a representative at our inner a support would be guaranteed for support would be guaranteed for the new group if it was within TI-MIX. To every one's relief the answer was a very definite yes so steps have been taken to have so steps added that the sor group.

gap between what they want and what they can be given.

The right strategy must narrow the "expectation gap" from both sides - by managed user communication. It will need to deliver the best service and support it can and bring user demands into line with economic and technical real-

We already know that frequent communication from users helps. It gives a clear view of their latest reactions. It helps DP draw up service strategies and policies which users will accept. It can prevent minor troubles turning into running sores that can hold back growth. It can make change easier to bring about.

On the user side, good com-munication from DP builds goodwill. It can head-off the temptation to go it alone with the wrong micro or mini, into a longer term dead-end. It can equip users to make the most of a service, exploit functions to the full and ensure they know what is and is not possible.

And much progress has, of course, already been achieved. The sustained upgrading of

communication skills by DP staff has been computing's can be argued, live in different "quiet revolution" of the 1970s. Applysts now interview with more insight, write more clearly, are tough - but come from dif-

DEFINE KEY RESULT AREAS. Which systems . . . applications . . . usor problems . . . users are most

critical? For the organisation? For future user relations?

2 SET OBJECTIVES. What must the users know...expect...understand...accept...be able to do

AUDIT THE FACTS. What are the current lovels of user satisfaction, expectation and knowledge? Are

they satisfactory? Is current communication really needed? Could it be improved? What extra communication is required? Which techniques are most effective in this organisation? What will help users most to get full benefit from computing? Are the communication objectives sound?

PLAN A STRATEGY. Validate communication objectives. Define user communication policies, Select communication approaches, systems, channels and techniques to meet objectives in the light of 1980/1998. Includes and techniques to meet objectives in the light of

CARRY IT THROUGH. Establish the systems and channels. Devolop the skills. Stage events. Produce

widely - from making DP ef-

User communication techniques have been forged in growing numbers (see figures 1 and 2 for examples). There is no shortage of methods now and the challenge each DP manager faces is finding the right "mix for his special needs. For, when it comes to communication, every organisation has its own special character. What works well in one will not "take" in another. And the techniques with most obvious appeal don't always do a cost-effective, let

alone the best, job.

While methods and skills are well applied, we still must tackle in systematic fashion the challenge of user education in the fullest sense. For, at the root of any communication problem one finds, if one probes deep enough, not a shortcoming of language or method but a difference of outlook or expectation. And it is the difference between the expectations and standpoints of DP staff and end users which so often leaves them as two groups divided by a com-mon technology. It explains why much user support fails to reach

its full potential. DP specialists and end users, it worlds. Their needs are not the same. The pressures they face

which should not be let out in Relate to user realities - we all know the world looks very lifterent from the user's side ( the desk. Communication which gets through is geared to the

differ. Their commitments vary

ficient and effective in the whole

organisation to writing and

working APL cash flow model

before lunch. One group knows

DP from the inside and hard won

experience, the other from more

communication is to recognis

successful user communication

then lies in finding the right

ways and means of bridging the

gap between the different

tlooks and edging them closer

Whatever approaches and

The first step to improving

these realities. The knack of

limited exposure.

■ Use agreed yardsticks — if users are left with hopes they may not have expressed but can never realise, they become the yardsticks with which they ludge the system. To avoid complaint, yardsticks should be

 Convey a sense of excellence - like any service function, DP cannot avoid having an image. It owes it to itself to project the right one to build user confidence. An image of sober, assured, realistic competence is very necessary - with a touch of excellence. I'll say more about some of

these in later articles.

#### 48 Aids to better communication Annual report to users Application simulation Joint task forces

Assignments Attitude scaling Audio-visual programme

Clear writing training Computer assisted Instruction Courses

Oirect personal contact DP information officer Ergonomics studies Fault reporting system dbooks

techniques are used to bridge HELP routines the gap, successful user com-Hot line House journal stories induction presentation munication typically displays several qualities. It will tend to: ■ Tie in to user needs — and tell Informal networks him what he needs to know, inquiry desk Interpersonal skills training when he wants to know it and in

a form he can use. ■ Taik user language — and cut down on jargon, acronyms. "nalve users" and other terms

user's outlook, pressures and experience. It takes note of his

agreed in advance.

Liaison grou**p**s "Local" specialists Vetwork mapping Personal computing advisors Personal computing control board Reference cards Reputation profiles Service reports Sociometric testing Steering groups

System documentation Understanding surveys Usage reports User briefings User guldes **User support groups** Norking partics

the same effort if clear objec-

tives are set for each item and

event. A common complaint of-

ten is that a committee, news-

letter or report has outlived its

purpose. With clear objectives

the value of every com-

munication can be checked

against the time and effort it

3. Manage from base facts.

Whatever the objectives of end

user communication they must

be achievable. To ensure this,

facts about the audience are

Even if problems are not

Figure 1: Many techniques are established. The management challenge lies in selecting the optimum mix for a given situation.

soaks up.

#### **GUIDELINES**

Achieving good user communication is a constant task. It makes major demands — on management time, effort and skills not least because every case is unique. Some general guidelines have, however, been

 Cut the problem down to size. Manage the problem and tackle it in stages. Define the key result areas. Settle on the objectives. Get the facts about how things stand now. Draw up a strategy, then tackle the issues, realisti cally, one by one.

> 2. Manage towards objectives. Often, communication tends to look after itself. Systems do get documented. Users receive their reports. Newsletters are issued. Steering committees continue to meet. But too often the return on the effort escapes review. More mileage can be got from

evident, a communication system, like any human system, needs regular checking and maintenance. Today's communication

research techniques are subtle but powerful management aids, when applied with skill. The day when major DP functions put the techniques to work is perhaps not so very far away.

Figure 2: Managing communication is the way to cut a major problem down to size.

File for information relating to any time

period. Positive control over cosh disburse-ments with input validity editing, selective examination of commitments and override

facilities for User control Automatic cheque reconciliation withholdments credit check-ing and facilities for multi-company, multi-

bank processing with unlimited reporting. Automotic distribution of journal entries

direct to General Ledger.

THE CASH-FLOW TWINS Cost-attractive advanced package systems ready to install Two separate application systems complementary to each **MMS Accounts** With complete in-house control and in-depth current and historical data on Payable and Receivable Accounts. Saving substantial overheads and many maniyears an Payable System

Written in ANS COBOL torum on IBM 360/370 (ICL soon). Simplicity derived from unique MMS Chain File—including exclusive Date

Install one you'll want the other Recouse they have many advanced date base features—proved in multi-divisional and multi-national structure. Fully interactive, too, with our powerful NWS General Ledger and Financial. systems development. Reporting System.

We back them with full support services — education,

We back them with full support services — education, implementation within 3.6 months, maintebanes and \_\_\_\_\_\_ enhancement.

Presentations without obligation by a technical sales Consultant Striply askyour secretary to phone or write we'll do the rest.

2 MMS Accounts Receivable System

Written in ANS COBOL to run on IBM 360/370 Virinen in ANS COSCI. for on his 300/3. (ICL soon) Flexibility for open item of balance forward—intermixing during the some run. Unique Chain File organisation: some run. Unique Chain File arganisation :
giving high speed cross-reference and updating between polical transactions and :
historical data. Extensive exception reporting dufing posting cycle, with reactions
under User control, and Cosh Forecast
reporting with Cash Application Document.
that eliminates key punch forms Enquiry
capability for customer status with visual
display of credit information it needed.

The second secon





#### bass and a KEFT15 high frequency unit mounted in a closed-box acoustic enclosure. Special attention has been paid to achieving a very clean sound in the mid-range where the ear is most critical. The speaker will handle 25 watts and is suitable for use with hi-fi. Read all about it in the construction article in this issue. And see, too, full construction details for a new low power microwave communications linkanother first for Wireless World, the comprehensive wireless WORD ELECTRONICS TELEVISION RADIO AUDIO:

Since then the whole-body scanner has been introduced and more than 600 EMI systems have been installed in hospitals all over the world. The honours heaped upon its

inventor, Dr Godfrey Hounsfield, include the coveted UK MacRobert Award and America's top scientific honour, the Lasker Award. A Queen's Award to Industry for technological achievement was followed by three in as many years for export achievement. Exports of the EMiscanner, since marketing began in. 1972, have now reached almost £160 million.

In this article, NANCY POCOCK explains how the system works.

# 'Greatest advance in clinical radiology since the discovery of X-rays'



information represented in a two-dimentional medium. Unwanted information, though blurred out, is still present and reduces the clarity of the picture. The CT scan produces an image which is genuinely twodimensional, a cross-section, and which contains no superfluous information. An X-ray beam contains far

CT. computerised tomography, scanning is used mainly in

diagnosis, but scanner pictures

over standard X-ray pictures:

the elimination of unnecessary

information, and the extreme

precision of the information

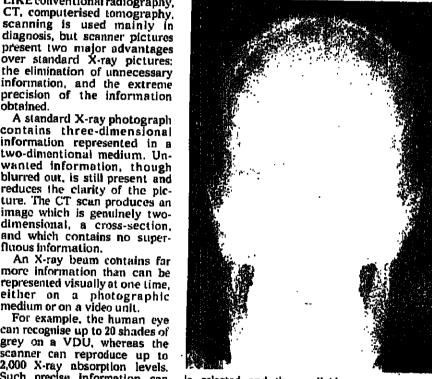
A standard X-ray photograph

contains three-dimensional

more information than can be represented visually at one time. either on a photographic medium or on a video unit. For example, the human eye

can recognise up to 20 shades of grey on a VDU, whereas the scanner can reproduce up to 2,000 X-ray absorption levels. Such precise information can only be represented with complete accuracy on a computer print-out, with each point appearing as a numerical value.

The scanner system is able to make use of the detailed information available to it through the ribs and vertebrae, or the the technique of VDU windowlungs, or the air spaces within ing. A range of absorption levels the lungs. The "focus" can be



ls selected and the available shades of grey are distributed over the range, so that at any one time certain details are highlighted and others faded width control. out. For example a scan of a chest slice can "focus" on either

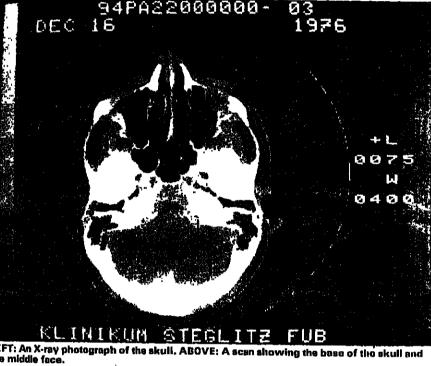
stician fall within narrow limits.

values shows dense bone at one end, with a value of +500, and air at the other, -- 500, but tissue ranging from +14 to +30 and congealed blood from +30 to +40.

The method uses an X-ray source and a detector which are rotated round a section of the patient's body so that a series of intensity readings can be taken area with a relatively lower through the section. From the readings a reconstruction of the

The patient's body lies between the X-ray source on one side, and on the other 32 following paragraph apply to the general-purpose whole-body scanner, but the method is the same in all EMIscanners). In this way the rate of X-ray absorption

The scanner makes a straight traverse across the whole of the scan section, taking readings as it goes, At the end of the traverse it revolves through an angle of 10° and begins another traverse. in all, 18 traverses are made and a total of 324,000 readings taken.



changed by the window level control, and the extent of the range of absorption levels is determined by the window

The value of this sensitivity lies in the fact that although the absorption values of the materials occurring in the human body cover a wide range, those most interest to the diagno-

EMI's scale of absorption

section is made.

detectors, which move around it (the figures given in this and the of the materials through which the ray has passed can be

The thickness of the slice of tissue scanned is determined by bhe whith of the X-ray beam,

resolution).

However, the slice may in fact be treated as a two-dimensional matrix, each measured point of which actually represents the average density of a cube of

The fact that a number of Those wishing to contribute to the appeal to the computer industry which aims readings are taken for each picture point, from different angles, is an essential feature of to raise the cost of the the method. Each individual computing olement of the Royal Marsden's EMiscanreading is a measurement of the amount of radiation absorbed ner should contact the along a straight line through the Cancer Research Campaign body of the patient. If the at 2. Cariton House Terrace, scanner merely took readings at London SW17, or the points on the circumference of a appeal organiser, David semi-circle around the patient's Ayers, at Tritech Computer body, no point would be covered Services, 01-948 4213/4. more than once, and it would be impossible to distinguish between a single point with a high absorption level and a large

floppy disc unit, a line printer or The scan reading data passes multi-imager camera which through amplifiers and anaproduces pictures on X-ray film, logue-to-digital converters and or a bromide paper camera). into the core storage of a 32K

A survey conducted by EMI Data General Eclipse (CW, September 1) has shown minicomputer, where it is prethat, ultimately, the use of a scanner can enable sizeable cuts processed to correct for such things as variations in the X-ray to be made in hospital costs. both by rendering other tests and often exploratory operaand in the speed of the system. (The larger scanner systems ncorporate two Eclipses.) tions unnecessary, and by It is then stored on the main reducing the time a patient system disc, and in core a picture spends in hospital. reconstructed from it on a 320 x 320 or 160 x 160 matrix (the

The Royal Marsden Hospital, at Sutton, in Surrey, has an EMIscanner which has been up latter giving higher density precision and lower spatial and running since July of this year. Since it is one of the two Pictures can be displayed from most important cancer research the disc on to the operator's display console. They can then hospitals in the country, the Cancer Research Campaign financed the purchase of its scanner; but the hospital has to be transferred, either selectively or automatically, to the magne-tic tape which serves as an find the running costs, estimated at about £100,000 a year. By far the greatest part of archive for scanner output.
They can also be output to u

Industry

salaries of the full-time staff required; one qualified radiologist to interpret the findings, one technician and one secretary and a minimum of two radiographers to work the machine one shift a day, and four or more if more than one shift is to be worked and the machine fully Maintenance and supplies

(mag tapes, etc) also figure on the list. Then there is the question of finding somewhere toput the ensemble of machine and staff -- at the Royal Marsdena new building was necessary.

At research hospitals like the Royal Marsdon the cost saving from the new machine will be less apparent, but the 🗝 detailed information madeavalable by it is greatly appreciated "Even in these very early

days, we are seeing things we have not been able to see before," says Dr.Jim Macdonald. consultant radiologist. "And sometimes being able to define exactly what is there can make the difference between mere palliation, and cure."

Diagnosis is not the only use to which the scanner data can be put. The Royal Marsden is experimenting with it in connection with treatment planning, a computerised technique developed at the hospital which uses a PDP-8 to plot an optimum path for X-rays destined to intersect and thus give maximum irradiation at the site of a cancer.

Scanner output is particularly suitable for use with this system. since aside from the wealth of detail it provides, the data is already in numerically coded form on mugnetic tape.

EMI still leads in the body

scanning field, although many other companies are now diagnostic viewing consolo, a marketing their own scanners.

time, and to date any method used to better EMI's time of 18 seconds would seem to cause a reduction in quality of information. This is because reducing scan time involves reducing the number of angles from which readings are taken, and with fewer readings a less accurate picture is obtained.

accurate picture is obtained.
Whether EMI will maintain its
Whether EMI will maintain its
lead remains to be seen. Other
manufacturers, led-by Ohlo Numanufacturers, led-by Ohlo Nuclear, are winning a share of the
market, but the large amount of
documented evidence which has
documented evidence which has
by now accumulated for the
success of the EMIscanner sill
gives the British company the
gives the British company the

gives the British couperature of the British couperature and the credit for "the British And the credit for "the British feet advance" in clinical facilities advance in clinical facilities advance in clinical facilities and british feet actions and who invented the cannel and which had been british feet actions.

Computers have been applied to non-numerical problems for almost as long as computers themselves have existed. It was in 1946 when A. D. Booth first suggested that they could be used

OVERCOMING the Language

continually refining the techni-

One of those who delivered a

paper at the EEC conference was Professor Shiu-Chang Loh.

head of the Department of

Computer Science at the

Chinese University of Hong

Kong, and leader of the machine

translation group at the univer-

He was also invited by the

United Nations Economic and

Social Commission for Asia and

the Pacific (ESCAP) and the

ordinating Committee (IGCC)

to conduct a feasibility study on

a machine translation system to

be used in one of the countries in

that region. He is well qualified,

for he has proved that the

machine translation of

mathematical articles from

Chinese to English can be carri-

ed out to an "acceptable" stan-

dard — acceptable, that is, to

readers at various libraries

throughout the world which subscribe to the English version

Inter-Government

During the past few years the need for machine translation has certainly increased. There has been an information explosion and it was estimated that 4,00,000 journal articles, 120,000 technical books,

were published in 1975 - about 60,000,000 pages - and output doubles every ten years. Here JOAN SMITH, of Manchester University, reports on how the European Economic Community is machine translation from Chinese for the translation of language. and 100,000 technical reports tackling the problems of the to English.

language barrier, and on the work of Professor Shlu-Chang Loh. head of the Department of Computer Science at the Chinese University of Hong Kong, in



# Barrier" was the theme of an EEC information systems and networks conference in Luxemburg earlier this year, and a burgersplan is to be impossible to the conference in the co Barrier" was the theme of an EEC information systems and three-year-plan is to be im-plemented under which experiplemented under which experiments are to be made in muchine translation. The European intention is to build up databanks of terminology, constructing multi-lingual thesauri, and to produce rough translation. The European intention is to build up databanks of terminology, constructing multi-lingual thesauri, and to produce rough translation.

structure of the target language, and a set of rules is programmed for analysis and synthesis, then the translated texts obtained will be readable and accurate.

Preparation of the Chinese texts for translation involves the breaking up of complex sentences into those with a simpler structure. Sentences in Chinese may lack verbs or subjects, and these are inserted to facilitate analysis and translation. Verbs, where they exist, have only one form, so the correct English equivalent has to be indicated. Articles must be added. In all, 16 different syntactic and semantic indicators may be used in the pre-editing.

Mathematicians may not be grammarians but it is generally thought that they often have the ability to be able to express themselves clearly and concisephrases occur again and again, reflecting the ordered nature of the work, and easing the transof Acta Mathematica Sinica, a lation procedure. One result of the Cultural Re-

journal published by the Chinese Academy of Science in The Chinese University Language Translator (CULT) project at Hong Kong was initiated in 1969. It was recognised at the outset that fully automatic high quality translation was not feasible. By contrast with other groups, the The meaning conveyed in the method they chose to adopt was not that of post-editing the tar-

get text, as had been done previously, but pre-editing the source text. They are of the opinion that by pre-editing the semantic and exical analysis will be much simpler and more effective. In language. Each "headword" characters which can be a word or a phrase. An entry comprises the source codes where each character of the "headword" is represented by the standard 1-digit Chinese telegraph code, function codes which provide information for grammatical analysis of the source item and selection of the target codes, and the target codes themselves giving a single meaning for the

source item, but listing all the inflected forms of the English

Source language analysis and

ly. In mathematics the same

volution, however, is that not all the authors of published papers have undergone a rigorous training in "classical" methods, and their modes of expression can be much freer and very different from those of their more orthodox colleagues; these idio-syncrasies present added difficulties at the translation stage.

original must be preserved in the translation; significant patterns in the source language must be identified precisely and have corresponding patterns in the target language. A machine dictionary, now containing about 30,000 items, is used for the theory, if the source language translation of patterns occur-can be pre-edited to make it as

# **New World net links**

UNDERLINING the potential threat posed by minicomputers to the traditional medium-scale mainframe market, Citibank Financial Trust is replacing its IBM 370/135 with two Data General Nova 3D minis, The iwin alms are to enable the bank to expand its UK business and to save money on its computing

60 UK Citibank outlets

The project, called New id, involves the installation of specially-designed micropro-cesor-based display and printer terminals at Citibank Financial Trust's 60 UK outlets (CW,

The terminals come from Megadata, a Long Island, New York company whose products are marketed in much of the world by Cable and Wireless, the British Government's communication services and systems

The terminals will communicate with the Novas via three concentrators from Infotron, of <sup>lenns</sup>auken, New Jersey, and the communications network is being designed by a small New York City

York City systems house, DP Communications Corp.

At the centre of the system will be the two Novas, each with three 92 Megabyte disc drives;

much of the special software for the system is being written by Data Logic of London. The minis are being programmed in as-sembler and Fortran, but Cobol will also be used in the second phase of the project for report generation programs. "We are putting in the system

because we want to expand our business in the UK," a spokesman for the bank told Computer Weekly. "With the batch system running on the 135, errors don't show up until one to three days after they happen, and that is

Citibank's Project Paradise, the overall philosophy under which the bank is rapidly replacing its large base of mainframes with multiple minicomputers, involves each unit of the bank making its own decisions about the computin system it wants. As a result, although Citibank Financial Trust has operations akin to the UK operations in France, Germany Beigium and Italy each will decide in isolation on its future requirements.

"They may consider adopting"
our system; or parts of it the specified of the specified hear requirements would only be after they have appealing they have appealing their requirements.

target language synthesis are then carried out. The function target codes are assembled for each sentence and the parsing is

done in three stages.

First, the relationship of the items is determined to establish the various parts of speech. An analysis is carried out classifying the items according to grammatical categories; items are rearranged to form a pattern of an English sentence, the relative order being dependent on the function of the phrases and clauses. Finally, the target codes for the sentence are determined based on the parts of speech of the items and their grammatical

item, the routine also considers some of its important properties which will then be used to translate those in other categories. Once a complete syntactical analysis has been done, the translated text is output on the line printer. Any missing items (e.g. mathematical formulae) are then inserted.

The routines are written in Standard Fortran and currently run on an ICL 1904A; transfer to other machines has been a major design criterion. The average speed of translation is about 60 words per CPU second, and the revival of interest in Europe.

whole process of translating 120 pages of Chinese to English akes just 10 days.

Input/output of the text remains one of the problems particularly for Chinese characters. This is one of the areas which Professor Loh is currently investigating.
Many problems encountered

in this field are dependent on further research in computational linguistics. More sophisticated models have to be designed than those which exist today. As far as machine translation itself is concerned, the

I DENEMOREDA



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# CSA 'Code of Practice' for recruitment companies

market for computer per- COMPANY MUST: ting up special sections to deal exclusively with this industry. There are also several organisations that concentrate on finding people for jobs in all areas of

To ensure that an acceptble standard is maintained for all concerned, the seekers and the staff agencles themselves, the Recruitment Division of the Services Association has produced a Code of Practice to guide its members who are dealing to that Code CSA members are also bound by the parties, other than clients.

association's Code of Con-The guidelines for the code of practice are given in B. CLIENTS

#### THE RECRUITMENT

#### THE RECRUITMENT

A. CANDIDATES

COMPANY MUST NOT: proach with a view to 1. Exert undue pressure offering alternative empon a candidate to gain his interest in a job, to cause candidate it has placed. him to attend an interview

or to accept a job offer. leading or incomplete infor-2. Denigrate an offer mation about a candidate in which a candidate has order to affect a client's received from another

3. Offer an alternative job 3. Without the express permission of the canplied to an advertisement didate's current employer, paid by a client before that approach with a view to offering alternative empthe candidate's application loyment opportunities, a rejected the job.

4. Offer alternative months, to have started or ccepted a new job, btained from another

5. Send the candidate's ietails to a client without irst informing the andidate of the name and ddress of the client

the candidate has given didates who, as far as it can 4. Advertise a job withunambiguous consent for reasonably ascertain, have out the express permission his details to be sent to relevant experience for the of the client offering that any possible employer considered suitable by the recruitment company.

such consent to indicate whether the candidate's name should be included in the details sent.

6. Knowingly put forward candidate for a job which unsuitable.

7. Knowingly give incom-

ete or misleading inforation to a candidate in der to influence the candate's decision about a job

candidates who are inter-8. Acknowledge the ested in the job offered or, where the candidate is put cussion, the company be

9. Inform candidates of the progress of their applications and notify them as soon as a decision has been

Inform candidates, in advance of interviews with the company or the client, what expenses will be reimbursed and by whom. facilities which allow inter-

views to be held without lationship between its being overheard. 12. Treat as confidential placement fees and canall information about a fluence its judgment when advising clients on candidate and not release it or any part of it to third

COMPANY MUST:

salary levels.

10. Ensure that candidates are reimbursed only their reasonable expenses

#### COMPANY MUST NOT: I. Without the express-

permission of the candidate's current employer, COMPANY MUST: **COMPANY MUST:** 1. Provide reasonable working conditions for its opportunities, a staff.

forward without prior dis-

lieves in good faith, the

7. Tell the client whether

or not the candidate has

8. Treat as confidential all

information about a client

and not release it or any

part of it to third parties

9. Not allow the re-

other than to candidates.

been interviewed.

candidate would be inter-

2. Provide reasonable 2. Knowingly give mis- training for its staff.

3. Ensure that its staff understand and observe the CSA Code of Conduct, this Code of Practice and all relevant legislation; in parto a candidate who has reticular the Employment Agencies Act 1973.

#### or the candidate has D. ADVERTISING

THE RECRUITMENT COMPANY MUST NOT:

RECRUITMENT 1. Offer candidates any financial inducement, or innt in kind, to reply 4. Before incurring any to an advertisement, to at-

in writing of its terms of cept a job offer.

Left an all all release of cept a job offer.

2. Use any misleading information in any advertise-

placement fees, advertising ment.

costs and expenses 3. Advertise a job which
5. Offer a client only can-does not exist.

#### MINI-REVOLUTION SALES EXECUTIVE Basic c. £6,000 + comm.

Fabulous apportunity to less shead by joining region US Group merbeling a much sought efter Nini Coreputer (over 5.000 systems installed in 1978). You market will consist mainty of DEM users where you can derive resumm sales from bulk buying theseby yelleding an income in sposs of C10,000 p.s.; you will asked to be remitted and ambigious with seles expensive and thing in London or Home Counties. Start basic around £8,000 + Ghat Corline Car. Cell ref. \$\$1019.

00 executive (KINGSTON) 01-546 9473

# Knight Contracts

#### Could you use 500 operators?

That's the number of operators we've got on our books at the moment. When you consider that we won't take anyone with less than 21/2 years' experience, that's lite a team. So even if we picked you a team of Knight operators at random, you'd be sure of top calibre ple. But we don't pick at random. Whether the job is for tomorrow or next month, regular or emergency, we make sure that every operator we send you has the right background for your type of hardware.

Sue Smyth, June Mogg and Jane Asbury will pick the operators you need. Call them now on 01-491 4706.

#### **Programmers Immediate Contracts**

RPGII Various locations – all machines. Ventek Datashare programmer for London. IBM - COBOL/BAL/PL1/RPGII/CICS. ICL - 1900/2900 - COBOL. FOR FRAN - PDP/IBM/Data General.

This is just a selection from our current list. We have many contracts mall areas, so if you have at least 4 years' programming experience, phone Richard Kaluzynski or Sue Calliam on 01–191 4706 to find the one that's right for you

# Univac90/60 Operators

Successful, stable oil company subsidiary with expanding computer department needs two operators, preferably with Univac experience, to work a two-or three-shift week. Free lunches, good working conditions, and the prospect of promotion to Senior Operator. Ref. AM/0040 **London** 

#### New jobs, new opportunities in **East London**

Sheer success is the reason behind the recent re-organisation and expansion in our client's DP department. And that re-organisation could mean real success for the DP people who can develop and extend the already wide range of commercial applications which this manufacturing company uses. Hardware is an IBM 370 operating under DOS, with extensive use of teleprocessing. Our client now needs the following

### **Project Leader** up to £6750 Systems Analysts

To work in admin systems such as sales support and stock control. The Ideal background is a formal systems training, although experience alone will still carry a lot of weight. The Project Leader will ideally be a graduate, and the Analyst should ideally have an O& M background, and at least one major IBM-based project to his or

#### **Senior Programmers** up to £5750

To lead small programming teams in the development of database and other programmes for production control and admin systems. Our Client is looking for

#### IBM 370/125 Operators £3733 Essex

Cosmetics company with a worldwide reputation and an IBM/125 under DOS/VS and POWER needs two young, bright operators to work a four-shift, 38-hour week. Real prospects for promotion to Shift Leader. Ref. AM/0042 London

#### Senior Analyst/ Programmer c. £4300+low-cost mortgage Leicester

A lot of people stand to benefit from our Client's life assurance and related activities - not least the Senior Analyst/Programmer the Company now needs to work in COBOL on a Honeywell 1-1200, soon changing to a series 6/66. If you're in your early to mid 20s with 3-5 years' commercial COBOL experience, this is a chance to find real project involvement while working in a pleasant city centre environment.

#### **Telecomms Technicians** £4600-£5000 plus car Birmingham and London

As one of the UK's biggest, busicst computer bureaus, our Client makes extensive use of data transmission between several data centres. At two of these centres in Birmingham and on the South-West fringes of London - the Company now needs technicians with at least 18 months' data transmission experience who are perhaps working as line controllers in a small bureau. and now want to move into something bigger. Birmingham salary is up to £4600, London up to £5000both with car and a top-level benefits package. Ref. B/059 Birmingham

#### **Analyst/Programmer COBÓL Programmer** £3600-£5000 Birmingham

The main attraction of these jobs - with a bureau whose principal customer is a large freight organisation - is the opportunity to bulld wide-ranging programming The COBOL Programmer will need 2-3 years' COBOL experience in a short space of time around four years' programming on IBM 370 machines, using PL1 (and perhaps Assembler) with ideally DBOMP.

Ref. JP/0029 London

The COBOL Programmer will need 2-3 years' COBOL Programm commercial background. Ref. B/125 Birmingham

# Knight Computer Services Limited, 14 Old Park Lane,

01-4914706 Knight 021-7728331

**Knight Computer Services Limited** Staff Services Division of BOC Datasolve Group and 🥌 a member of Computing Services Association.

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You will be able to give practical assistance to customers in areas like

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Based at Holborn, Hammersmith, Croydon or Colchester, your selary will be above £5,000 but negotiable according to experience for top applicants. A company car of a car allowance is also offered:

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#### Consequently, the person we are looking for will know his or her way round current computer technology. He or she will already have had a responsible position in computing, probably in Systems or Programming, and will be able to prove from past experience that he or she can control people and produce realistic recommendations to non-computer

The position is not an easy one, and we are looking for someone with dynamism and confidence to greatly improve the performance of our client's installation. However, if this latter is achieved the rewards will be significant.

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Data Processing Manager

Income: In the range £8,000 to £10,000 per annum

# JOHN GOLDSMITH (Computer Recruitment) Ltd.



**Location: South London** 

Our client, one of the best-known public companies in the

United Kingdom, has a range of products that are household

Based in South London, they now wish to recruit a Data

Processing Manager to take charge of an already established

Data Processing Department, and to take this department

into 'the 1980s'. The initial tasks will be to ensure, a) that the department keeps running on a daily productive basis, and b)

that thorough investigations are made into the development

of new computer facilities within a two-year framework.

These facilities could cover either a new Mainframe, a large

Plus company car

Are you at your best on a fast track?

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It's all happening at Honeywell during the Year of the Tiger. Right now we need Systems Support Staff to help us implement our medium size series 60

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We'll expect you to have a good programming background. COBOL, RPG II and/or assembler language, have multiprogramming experience and be capable of carrying out high level systems implementations on madium size series 60 range.

#### Cranfield Institute of Technology invites applications

#### Programmer in the Computer Centre which has an ICL 1903T computer with EDS

60 backing store operating u GEORGE 2 and MAXIMOP. The parson appointed should have a working knowledge of FORTRAN and ALGOL 68. The job includes assisting users in an edvisory capacity, package an an edvisory capacity, package and an edvisory and an edvi

Salary will be on the scale £2904-£4811 (under review).

of Tachnology Cranfield, Bedford, MK43 OAL quoting reference 672/8 (closing date for applications 11 November 1977)

STRATHCLYDE

COMPUTER PRÖGRAMMER in the MANAGEMENT SYSTEMS DIVISION of the University

DIVISION of the University of the post will involve programming in Co80L for both new systems and the maintenance of existing systems. At present the University Administration, operates a Honolyveit (GE-415. 2K teph/den system, which provides both batch and interactive processing capability.

The appointment is pericularly suited to a young parent with gradules or other qualifications in Computer Science or with some experience of programming in a bigh level language. The autocessius applicant will have the content only to work with an established term of experienced paragrams if fillings a wide variety of modern equipment and techniquies.

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Balary settin \$2.904 . £8,627, set
anount on Grade 1.4 of Nettorial Salary
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and produce realistic recommendations to non-computer

management with regard to hardware and systems

The position is not an easy one, and we are looking for

someone with dynamism and confidence to greatly improve

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MICHAEL WHITE 01-261 8028/8656

# CSA 'Code of Practice' for recruitment companies

The continually expanding THE RECRUITMENT 6. Offer to a client only market for computer per- COMPANY MUST: sonnel has resulted in many ting up special sections to deal exclusively with this industry. There are also several organisations that concentrate on finding people for jobs in all areas of

To ensure that an acceptable standard is maintained for all concerned, the potential employers, the job seekers and the staff agen-cies themselves, the Recruitment Division of the Computing Services Association has produced a Code of Practice to guide its members who are dealing with personnel. In addition to that Code CSA members or any part of it to third are also bound by the parties, other than clients. association's Code of Con-

The guidelines for the code of practice are given in **B. CLIENTS** full here:

#### A. CANDIDATES

THE RECRUITMENT COMPANY MUST NOT:

1. Exert undue pressure on a candidate to gain his interest in a job, to cause him to attend an interview or to accept a job offer.

2. Denigrate an offer which a candidate has received from another

3. Without the express permission of the candidate's current employer, approach with a view to offering alternative employment opportunities, a or the candidate has D. ADVERTISING candidate it has placed.

4. Offer alternative employment to a candidate known, within the last 12 accepted a new job, COMPANY MUST: obtained from another

5. Send the candidate's details to a client without first informing the candidate of the name and

his details to be sent to any possible employer considered suitable by the recruitment company such consent to indicate whether the candidate's name should be included in the details sent.

6. Knowingly put forward a candidate for a job which

is unsuitable.
7. Knowingly give incomplete or misleading information to a candidate in order to influence the candidate's decision about a job

candidates who are inter-8. Acknowledge the where the candidate is put receipt of all candidates' forward without prior discussion, the company be-9. Inform candidates of lieves in good faith, the

the progress of their applicandidate would be intercations and notify them as soon as a decision has been 7. Tell the client whether or not the candidate has 10. Inform candidates, in been interviewed.
8. Treat as confidential all advance of interviews with

the company or the client, information about a client what expenses will be and not release it or any reimbursed and by whom. part of it to third parties 11. Provide interviewing other than to candidates. facilities which allow inter-

9. Not allow the reviews to be held without lationship between its nlacement fees and can-12. Treat as confidential didates' salarles to inall information about a fluence its judgment when advising clients on candidate and not release it or any part of it to third salarv levels.

10. Ensure that canlidates are reimbursed only their reasonable expenses

#### THE RECRUITMENT

being overheard.

1. Without the express- C. STAFF

permission of the candi- THE RECRUITMENT date's current employer, COMPANY MUST: nroach with a view to Provide reasonable offering alternative emp- working conditions for its loyment opportunities, a staff. candidate it has placed. 2. 2. Provide reasonable

2. Knowingly give mis- training for its staff. leading or incomplete infor-3. Ensure that its staff mation about a candidate in understand and observe the order to affect a client's CSA Code of Conduct, this

to a candidate who has re- ticular the Employment paid by a client before that the candidate's application

#### months, to have started or THE RECRUITMENT

4. Before incurring any to an advertisement, to atexpenses, inform the client tend an interview or to acin writing of its terms of cept a job offer. business and in particular 2 Use any misleading in-its terms in relation to re-formation in any advertise-

candidate of the name and address of the client costs and expenses UNLESS:

the candidate has given unambiguous consent for his details to be contained.

The candidate has given unambiguous consent for his details to be contained.

The candidate has given unambiguous consent for his details to be contained.

The candidate of the name and placement fees, advertising ment.

Softer a client only candoes not exist.

The candidate has given unambiguous consent for reasonably ascertain, have out the expression of the client costs. relevant experience for the of the client offering that

THE RECRUITMENT COMPANY MUST NOT: 1. Offer candidates any

Code of Practice and all

relevant legislation; in par-

financial inducement, or in ducement in kind, to reply

#### MINI-REVOLUTION SALES EXECUTIVE Basic c. £6.000 + comm.

Fabulous opportunity to lest abased by Johing major US Group marketing a much sought after Mink Computer lever 5,000 systems installed in 1976). Your market will consist mainly at DEM agent where you can derive materium sales from but buying thereby yielding an income are sposes of C10,000 a. a. You will play have to be considered and ambitious with sales separtence and living in London w Home Counties. Stern basic around £6,000 + Ghia Contine Cer. Cell (et . 5310 § 9.

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#### Could you use 500 operators?

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#### **Programmers Immediate Contracts** RPGII Various locations - all machines.

Ventek Datashare programmer for London. IBM - COBOL/BAL/PLI/RPGII/CICS. ICL - 1900/2900 - COBOL. FOR FRAN - PDP/IBM/Data General,

This is just a selection from our current list. We have many contracts multigreas, so if you have at least 4 years' programming experience, phone Richard Kaluzynski or Sue Gillam on 01-491 4706 to find the one that's right for you.

# £3569 City

Successful, stable oil company subsidiary with expanding computer department needs two operators, preferably with Univac experience, to work a two- or three-shift week. Free lunches, good working conditions, and the prospect of promotion to Senior Operator.

Ref. AM/0040 London

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# Univac 90/60 Operators IBM 370/125 Operators

Cosmetics company with a worldwide reputation and an IBM/125 under DOS/VS and POWER needs two young, bright operators to work a four-shift, 38-hour week. Real prospects for promotion to Shift Leader. Ref. AM/0042 London

#### Senior Analyst/ Programmer c.£4300+low-cost mortgage Leicester

Alot of people stand to benefit from our Client's life assurance and related activities - not least the Senior Analyst/Programmer the Company now needs to work in COBOL on a Honeywell H200, soon changing to a series 6/66. If you're in your early to mid 20s with 3-5 years' commercial COBOL experience, this is a chance to find real project involvement while working ma pleasant city centre environment. Ref. B/057 Birmingham

#### **Telecomms Technicians** £4600-£5000 plus car **Birmingham and London**

As one of the UK's higgest, busiest computer bureaus. our Client makes extensive use of data transmission between several data centres. At two of these centresin Birmingham and on the South-West fringes of London - the Company now needs technicians with at least 18 months' data transmission experience who are perhaps working as line controllers in a small bureau, and now want to move into something bigger. Birmingham salary is up to £1600, London up to £5000 both with car and a top-level benefits package. Ref. B/059 Birmingham

#### **Analyst/Programmer COBOL Programmer** £3600-£5000 Birmingham

The main attraction of these jobs - with a bureau whose principal customer is a large freight organisation - is the opportunity to build wide-ranging programming experience in a short space of time. The COBOL Programmer will need 2-3 year experience; the Analyst/Programmer should have a commercial background, Ref. B/125 Birmingham

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Our client, one of the best-known public companies in the

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Based in South London, they now wish to recruit a Data

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Data Processing Department, and to take this department

into 'the 1980s'. The initial tasks will be to ensure, a) that the

department keeps running on a daily productive basis, and b)

that thorough investigations are made into the development

of new computer facilities within a two-year framework.

These facilities could cover either a new Mainframe, a large

Plus company car

WE ARE ALWAYS INTERESTED IN HELPING YOU WITH YOUR CAREER John Goldsmith (Computer Recruitment) Ltd., 15, Buckingham Palace Road, London, S.W.1. Tel: 01-828 5356-24 hour answerphone service.

Data Processing Manager

Income: In the range £8,000 to £10,000 per annum

# JOHN GOLDSMITH (Computer Recruitment) Ltd.



Are you at your best on a fast track?

Sprinters and long distance runners

is all happening at Honeywell during the Year of the Tiger. Right now we need Systems Support Staff to help us implement our medium size series 60

Systems Support is a vital and highly respected function at Honeywell, Clear-thinking involvement on your part, and a fleir for solving complex problems in our environment, could lead to considerable personal advancement. considerable personal advancement.

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You will be able to give practical assistance to customers in areas like:

industry applications, database and

Based at Holborn, Hammersmith, Croydon car or a car allowance is also offered.

#### Cranfield Institute of Technology

**Programmer** 

in the Computer Centre which has an ICL 1903T computer with EDS 60 backing store operating under GEORGE 2 and MAXIMOP. The person appointed should have a working knowledge of FORTRAN and ALGOL 88 preferably in an ICL anvironment The job includes assisting users in an advisory capacity, package an Salary will be on the scale £2904-£4811 (under review)

Further information and application form can be obtained from: of Technology Cranfield, Bedford, MK43 OAL questing reference 672/8 closing date for applications 11 November 1977)

STRATHCLYDE

COMPUTER PROGRAMMER in the MANAGEMENT SYSTEMS
DIVISION of the University

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The post will throbe programming in COBDs, for both new signature, and the mishintengency of satisfing legislams. At gressel, the Linkwesty Administration reperties a "Honoyenil (GEP-415; 32K tape / dec system, which provides both back and interesting processing capability.

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To ensure the smooth day-to-day running of the operations department the successful applicant will be required to schedule all production work and test-shots with a view to obtaining the utmost efficiency from a small multi-programming machine. Supervisory capability will prove beneficial since the person appointed will be responsible for a team of operators, data control clerks, and punch operators. Applications are invited from candidates who now feel ready to accept additional responsibility and

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The salary will be on a scale up to £4.180 per annum plus USS/USDPS Further particulars and application forms (2 vopies may be obthined from the Personnel Officer, Uniterest Coffices of Swiphsen, Singleton, Park, Swiphsen, S.A.Z. 1897, 20 when they should be instrumed by Friday, Novienber 11, 1977. **Real Time Programmers** 

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S.T.C. at New Southgate need programmers who will develop discrete parts of this New System, and who will have

If you have had Real Time Programming experience in a.g. Road/Air Traffic Control, Flight Simulation or Military Systems, and would like a change to Telecommunications, communicate with us.

The Division is situated on the outskirts of North London with easy access to Central London and rural Hertfordshire. We are part of a large well established and pleasantly situated location with all the facilities and amenities that

We offer competitive benefits and very real prospects of advancement for the right men or women.

Telephone or Write to: Mike Randal (Department 32210), Standard Telephones and Cables Limited. Switching Main Exchange Products Division, Oakleigh Road South, New Southgate, London N11 1HB. 01 - 368 1200 Ext. 3066.

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# REAL TIME MINI

## That was great! More please — up to £9k

Last time we put out feelers for Real Time Mint-orientated programmers and analysts — and it was only a few weeks ago — we thought we were getting enough to keep us

But no. We have already exhausted the lot.

And, as fast as we place them, we get asked for more. By manufacturers, consultancies and users all over — not only in London, but also elsewhere inthe UK and abroad.

We're aware that you may have your mind on a Christmas bonus that you won't get if you leave where you are right away. But don't give it another thought, invariably what we have to offer more than makes up for little things like that.

Examples - just examples - of what we've got going for you now:

#### BERKS £3,500-£9,000

Progs — Mini, Commercial, Assembler and On-Line 18 months + exp. — Ferranti Argus 700, experience of Coral, 2 years + exp. — Fortran for commercial applications. —PDP11/70 + RSX 1M + Fortran 1V, ideally Cobol and Real Time.

Progs/Cons — Applications systems work, Algol Coral, Assembler or Interdata 32. — With Data General Experience to work in Basic. Project Leaders — Senior DP peuple to work as Project Leaders or on Pre Sales Work.

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Sea Prog/Anal — With software experience to work on a number of varied and wide anging projects and activities with Technical Operations.

Engineers — Mini Computer Design Engineers, with an appreciation of the commercial aspects of the industry, and an ability to handle Project Engineering and Management

HANTS £4.800

#### LONDON

Vicades exist in London for all the above type people, plus people with experience of: Process Control, Message Switching, Communications, Word Processing, Flight Smalton, Banking, Technical, Scientific or Commercial. In fact if you have any type of the Control of Real Time Mini experience just call us.

P.S. Vacancies exist in all Home Counties

As we said, just examples. There are lots more. Just dial 91-836 6073 or 01-323 2795, and ask for Beryl McLaren.



#### SIEMENS

# Computer Service Engineers

#### Our extensive Product Training can assure your future

As part of one of the world's leading electrical and electronics organisations we have become market leaders in data and information systems which are the result of original research and data. Our Service Division with its brand new facilities at

Sunbury-on-Themes now needs comprehensively experienced engineers with broad based knowledge of process computers and related peripheral equipment. You will be responsible for servicing various systems throughout the UK and will be expected to take advantage of extensive.

product treining in both England and Germany.

Aged 24 + and educated up to HNC Electronics standard you will have the opportunity to progress within our expanding

The starting salary is excellent and benefits include 4 weeks holiday and a non-contributory parsion plus an attractive car.

scheme. Please write of telephone Ray Parke/Recruitment Slemens Limited Slemens House Windmill Road Sumbury on-Tilemes Telephone Sumbury 85891.

SYSTEMS PROGRAMMERS

To £5,000

The Company are looking for in person educated to degree / HND / HNC standard Real time systems programming eason preferably using ASSEMBLER language and epplied to minit computers. PROGRAMMER/ANALYSTS

C. £5,500 S.E. LONDON/N.SURREY

**PROGRAMMERS** 

C. £4,500 REIGATE/CATERHAM

ANALYST/PROGRAMMER

C. £5.500

The U.K. additions of a world renowned argenisation with an IBM 370 is seeking an ambitious parson with at least 2 years. systems experience to be involved mainly in systems work but not averas to some programming Please phone for an Application Form.

# TELEPHONE: 01-767 0611

#### SENIOR **COMPUTER OPERATOR**

£2922-£3702 + £312 + 5% (max. £208)

Required at the City of Birmingham Polytechnic Computer Centre at Perry Barr. Applicants should have at least two year's experience on ICL 1900 range, and a good working knowledge of GEORGE 2 and/or MAXIMOP.

Candidates, male/female may obtain application forms returnable by October 27th) from:

The Personnel Officer
City of Birmingham Polytechnic
F Block, Perry Barr Birmingham 842 25U Tel. 021-356 6911, Ext. 217

# **Wanagement**

on a wide range of computer systems essignments operating within multidisciplinary project teams. Each team is totally responsible for the project from its initial user investigations through to computer systems specification and final implementation

We now wish to strengthen the Department and should like to hear from applicants (male/female) who either have a record of successful commercial systems design and implementation or wish to extend their existing computer experience. Enthusiasm and the ability to communicate at all levels is essential, plus a willingness to travel and, on occasions, stay away from home.

The salary is negotiable, based on experience and the ability to make an immediate contribution, and benefits include free life assurance and contributory pension scheme. A Company car will be provided for the senior posts.

Applicants should write, giving full personal and career details to:-Mrs. D.M. Rowe,

Recruitment and Training Officer, Tarmac Roadstone Holdings Limited, Roadstone House, 50 Waterloo Road, Wolverhampton.



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## **PROGRAMMING SUPERVISOR**

S. MANCHESTER

£5,000 - £5,750

Our client, an engineering company in the South Manchester area, runs an IBM 370/115 under DOS/VS with both financial and production applications.

A programming supervisor is required to take responsibility for all aspects of the work of a small programming section and is also expected to work closely with systems analysts on future project

Applicants must have an in-depth knowledge of COBOL and whilst some experience of database and on-line techniques would be preferred, it is not essential.

The successful applicant, who will report to the data processing manager, will be offered a starting salary in line with his/her experience, and attractive relocation package.

Initial interviews can be held in Manchester, Sheffield or London.

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IBM DOS BAL, COBOL. West End, Surrey UNIVAC, IBM, COBOL, Paris PL/1. City of London IBM DOS. COBOL, DL1, West End, South Coast

**CSC** immediate project requirements:

IBM OS COBOL, MARK IV. West End Phone or write now

central systems consulting

12 Hollytree Close, Inner Park Road, London SW19 6EA Telephone: 01-789 3144

## **AUSTRALIA EDP CAREER OPPORTUNITIES** £8,000-£14,300



istomised computer applications. In 11 years of operation we have grown to some O professional staff in Sydney, Melbourne, Brisbane, Canberra, Perth and Adelaide.

The positions available are for programmers, enalyst programmers (range £8,000—£11,100), technical specialists, project leaders and consultants (range £11,100—£14,300). In order to obtain a visa, at least three years' continuous experience in

Project management

● EDP consulting

- Applications programming
- Systems analysis and detign
- Machine isouse systems support Database systems

CAREER OPPORTUNITIES

The company operates in all areas of commercial applications — consulting, systems design and programming, on main-frames as well as commercial minis, operates a small turnkey-burgeu and EDP training. The expansion of business in EDP consulting, plus the high professional reputation of the company has led to vacancies in all five States of Australia.

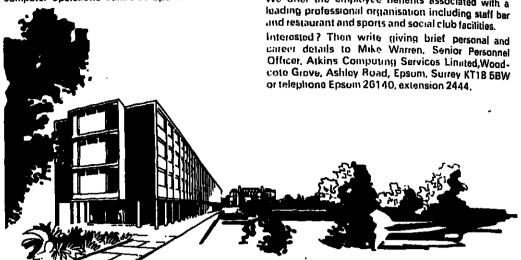
Our founder and Managing Director will be visiting London to interview prospective candidates. Enquiries from Australians Interested in returning home are also welcome. Send a brief resume (including a day and evening phone No.) to Mr. H. Douglas C/o Bartlett Jeffress Advertising Ltd, 23/28 Fleet Street, London EC4Y 1NB, to arrive by November 7th.

Dates Pty, Ltd. 220 George Street, SYDNEY, N.S.W. 2000

# Computer Operations

We are a successful and well established remote. We offer appropriate training and advancement to Operators and Data Controllers at various levels to work with advanced equipment in our modern

access and timesharing bureau, with a large country shift leader grades for those who possess the wide network, and an overseas operation. We require relevant experience, are willing to accept increased rosponsibility and have the urge to progress through the Company computer operations centre at Epsom. We after the employee benefits associated with a



# **Programming Manager**

N.W. London

Salary Negotiable

Atkins Computing-

The company is a market leader in its specialised engineering field with excellent growth prospects and an extremely impressive export record. Diversification across the market area and abroad, coupled with technical innovation, has led to several Queen's Awards to Industry.

In DP, both hardware and software are being significantly enhanced with a larger IBM 370 system, CICS, DL/1 and both in-house and remote terminals.

Technical strengths and ability alone are not sufficient; the position requires a good man manager. Previous management or at least team leading or supervisory experience is required. The person appointed will be expected to be capable of formulating and implementing policy for the programming area including the investigation of new programming techniques and the definition of standards. Naturally a high level of technical expertise is also expected; the use of COBOL in a DOS/VS environment, familiarity with CICS/VS and DL/1 and preferably ability with other languages such as ASSEMBLER and PL/1.

The company offers an excellent basic salary, a bonus scheme, company pension scheme and other fringe benefits associated with a major organisation. There is a large car park and excellent public transport facilities. For further details write or telephone our CROYDON office quoting ref: CW59-7J.

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CAPP ASSOCIATES

CITY ARCHITECT'S DEPARTMENT

(max, £208) supplements

Responsible for programming, man-power resourcing and cost control on all projects being undertaken by the Department and in addition, to continue the computerisation programme in these areas.

Applicants should be qualified Computer Programmers and fully conversant with the ICL 1900 computer package and preferably have some experience of Computer Aided

Candidates, male/female, may obtain application forms (returnable by 4th lovember 1977) and job descriptions from:-

City Architect, City Architect's Department. Baskerville House, Civic Centre, Broad Street, Birmingham B1 2NE. Tel: 021-235 4492/3247

Please quote Ref. 4/844

Canvassing of members of the City Council will disqualify.

BIRMINGHAM CITY COUNCIL

Warwickshire County Council

MIDLAND ROAD CONSTRUCTION UNIT

Programmer

80 1/2 (£4,239 - £4,992) plus Supplem Allowances — Post No 27

#### **Assistant Programmer**

AP 4/5 (£3,366 - £4,095) plus Supplementary Allowances — Post No 40

Applications are invited for the above vacancies at the Headquarters of the Midland Roads Construction Unit in Learnington Spar. The Unit is responsible for Motorway and Trunk Road projects for 8 Midland Counties and the successful applicants will join a team working on interesting supplications in the little of the littl lications in the lield of highway engir

Systems analysis would form a vital part of the work and applicants should possess an appropriate qualification and have good experience of I.B.M. 360/370 machines under the good experience of I. Assembler would be an advantage. The persons applicate should also have experience in highway design by compute the candidates with experience in other disciplines will be considered.

The appointment will be on the permanent staff of the Warwickshire County Council and will be subject to the National Conditions of Service, the Local Government Superamnustion Acts and the production of a satisfactory Medical Certificate. The personal supportant will be of Medical Certificate. The personal supportant of Transport permanent secondment to the Department of Transport.

Application forms can be obtained from the Director, Midland Road Construction Unit, Brandon House, 82.8 Holland Road Construction Unit, Brandon House, 82.8 Holland Road Construction Spa to whom they should be returned by not later than Friday the 4th Navimber 1877.

# Duncan Bransom Recruitment

# DATA PROCESSING **MANAGER-£7.500**

2 Years Cobol Programming

3 Years Successful Systems Analysis and Design

Installed at least One System from Start to Finish

Ready to Run Your Own Small Department

the United Kingdom and part of the giant RCA

corporation, there may be an opening for you as their

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Familiar with OS and RJE

Capable of Learning the Ins and Outs of any Mini-Computer in Under Two Weeks

Prepared to Work Hard and Meet Production Deadlines

Pleasant and Likeable Person with Plenty of Drive

Prepared to Accept the Responsibility for All Data Processing Activities for a Large Company

At HERTZ UK LTD the Hertz operating company in The Data Processing Manager will be responsible for the design and operation of all systems for HERTZ UK LTD and will be located at Norbury, London, SW16. There will be regular contact with the European Headquarters at Hertz Europe Ltd. Future promotion and career development could include a transfer to European Headquarters.

> **OPERATOR (OPERATIONS** SUPERVISOR DESIGNATE)

> > \* a minimum of 12 months' operating experience

\* preferably experience on IBM System 3 equipment

Applicants should have:--

\* flexible attitude.

Please write or telephone for an application form to: Roger Griffiths, Duncan Bransom Ltd., 37, Hillcrest Road, Loughton, Essex Telephone 01-508 5121

against each of these questions.

**Duncan Bransom Limited** 

# SOUTH LONDON-CROYDON AREA

DO YOU FEEL YOU WOULD LIKE A POSITION OF RESPONSIBILITY IN A SMALL TEAM WHERE YOUR CONTRIBUTION REALLY COUNTS? READ ON

Our clients are looking to employ experienced Analyst/Programmers and a further Operator to augment their existing team. They are committed to a heavy reliance on that processing facilities and are currently involved in developing a sophisticated integrated accounting system. Further systems development plans are too numerous to list, it is suffice to say the environment is dynamic and developing, where your potential and capability will be stretched to the facility of the

## RPG II ANALYST/PROGRAMMERS SALARY TO £5,500 P.A.

- \* a fluency in RPG II and a minimum of 12 months' programming experience, in a commercial environment
- \* the ability to liaise with top members of management
- \* a pleasing personality and the desire to work with the minimum of supervision.

Company benefits again are "many-fold" to include a pension scheme, free luncheon youchers, four weeks hollday a year plus statutory allowance, and concessional travel.

INTERESTED?

PHONE: CATHY TRACEY

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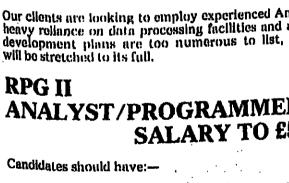
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REF. NO. CW/10/9:

**SALARY £4,000 P.A.** 

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#### Consultant

A consultant is required to join a busy team primarily engaged on city assignments. Candidates will have a sound d.p. background with particular emphasis on financial applications, say, Banking, Insurance and Stockbroking. Additionally, the key function will be client liasion, therefore applicants must be personable and have the ability to communicate effectively with senior management. This is an excellent opportunity to work for a reputable consultancy organisation and to make a significant contribution to the company's growth. A substantial starting salary will be paid to attract high calibre candidates.

Contact: Margaret Stevens

#### Systems Analysts

Kent/Essex

up to £5,950

circa £9,000

Our client, a well known manufacturing company, offer exceptional systems development work and progression into project leader positions. Ideally, candidates should have a background in production control, sales administration, stock control, or accounting. Consideration will be given to relatively junior analysts and senior programmers wishing to make the move into analysis.

Interesting, varied work at excellent salaries.

Contact: Mike Creamer

#### **Junior Systems Analysts**

Central London

A large retail organisation now requires additional development staff in their merchandising section. Candidates must have had some formal training in analysis and at least two years programming experience, ideally in COBOL. Programmers wishing to progress into analysis are invited to apply as trainees. IBM experience is particularly desirable but not essential.

Convenient location, excellent salaries, great prospects.

Contact: Mike Creamer

**Process Control** 

London & N.W.

up to £6,500 Our client, a well established name in the process control and automation industry, has opportunities for engineers with a software background to join their development teams.

Candidates must have several years experience in programming preferably in FORTRAN, CORAL, RTL/2 or ASSEMBLER and be able to demonstrate a sound background of industrial control systems. Salaries and fringe benefits are above average with the opportunity for advancement and travel.

Contact: Jim Baker

Analyst/Programmers

West of London neg, circa £6.000

Applications are invited from those who can make an immediate contribution in a demanding technical role. Essentially your d.p. experience should have covered a broad spectrum of commercial or manufacturing applications, and a thorough knowledge of an Assembler level language. Specialist skills, such as real-time development on minicomputers will be highly valued. You will be working on possibly the most advanced manufacturing control system outside the U.S.A.

The client is looking for well educated people, with out-going personalities, who have the ability to document clearly and to work well under pressure. These positions offer a varied and challenging working environment and the opportunity for the ambitious programmer to join a small but highly professional team.

Contact Margaret Stevens

#### **Programmers**

Surrey

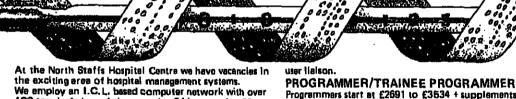
A large international finance organisation has vacancies for Programmers to work on sophisticated real-time and teleprocessing systems. Applicants must have at least six months experience of a high level language, such as COBOL, PL/1 or BASIC, in a commercial environment. An extensive training programme is available.

Salaries negotiable according to experience. Excellent fringe benefits.

For further information on any of the above vacancies please contact the appropriate consultant. If your qualifications do not match the above positions but you are seeking other opportunities please contact us anyway.

> JAMES BAKER ASSOCIATES **International Personnel Consultants** 16 Maddox Street, London W.1. Tel: 01-491 4478

# Real Time Computing in The Health Service 📆



we employ an I.C.L. based computer network with over 100 terminals in real time running 24 hours a day. Many of, the applications are pioneering and employ innovative real time techniques.

We require the following staff:

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Scale 14 E4536 — £5613 + £312 + 5% (maximum £208)

Starting scale 4 (£3534 - £4344) with prospect of promotion up to £4983 + £312 + 5% (maximum £208)

SYSTEMS ANALYST

Both posts require at least 5 years in-dapth programming and systems experience. The Senior Analyst will be capable of leading multi-disciplinary teams in successful implementation. Much of his/lier work will consist of

Programmers start at £2691 to £3534 + supplem Trainess start at £2181 to £2691 + supplements. Future advancement, commanding salaries up to £4983 will depend on ability and experience gained.

The successful programmer will be working in an advanced multi-processor real time environment, using I.C.L. and Data General equipment, with both high and low level languages where our professional approach ensures the highest standards.

For further particulars and/or an application form please apply to the Director of Computing Service, North Staffordshire Royal Infirmary, Princes Road, Hartshill, Stoke-on-Trent ST4 7JN. Telephone Stoke-on-Trent

North Staffordshire Health District. dahire Area Health Authori

#### BRISTOL **SOUTH WEST SOUTH WALES** Analyst Prog (PL1 + CICS) £4.5K

Project Leader (ICL) £6.K Analyst Prog (Support) £6.K Analyst (ICL) £5.1K Analyst (ICL) £4.5K Analyst (IBM) £4.5K Analyst Prog (BAL Cobol) Programmer (ICL) £4.5k
Programmer (Various) £3.4k
Operators (IBM + ICL)
£3.5k

South West WILTS & GLOUS) Analysts (ICL) £5.6K

Programmers (ICL) £5K Programmer (ICL) £4.5K Programmer (Various) £4K Analysis (Support) £4K + Operator (ICL) £3.5K Analysta Prog (Cobol) £4.2K

South Wales

Programmer (Support) £3.5K + CAR Analysts (Support) £4K + CAR Analysts Prog (RPGII) £3.6K Programmer (Various) ENEG

STOP PRESS (South Coast) Programmer (DEC/Corel) ENEG Analyst (ISM) £5K Prog (OS/Cobol) £5K

SANDERSON EXECUTIVE 9a Princess Victoria St., CLIFTON, BRISTOL 8 TEL, 0272 39302



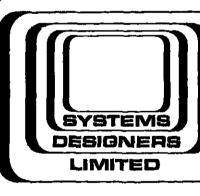
# **OPERATIONS** CONTROLLER

We are looking for an Operations Controller with some systems analysis experience to assist in the day-to-day running of a small ICL 2903

It will be necessary as part of the duties to operate the computer and Direct Data Entry equipment.

The successful applicant will be aged 25 to 30 and have several years' experience of OCL techniques

Please apply in writing to Personnel Department, Carlaberg Brewery Limited P.O. Box 46, 140 Bridge Street, Northampton NN1



Systems Designers Limited is a leading, and expanding, British systems consultancy specialising in mini and micro computer applications.

Growing demand for our high quality service has created a full order book, with

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BUPA and pension scheme, and a lively Sports and Social Club. Assistance is

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**REAL-TIME SYSTEMS** 

environment and wide career challenge.

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**PROGRAMMERS** AND SYSTEMS **ENGINEERS UP TO £6,500** 

Requirements exist in all areas including communications systems, advanced military systems and industrial process

We are interested in hearing from programmers and systems engineers at all levels. Applicants must have at less one year's experience, good academic qualifications and proven software abaility, together with a profess

#### ADVANCED SOFTWARE

We are deeply involved in compiler technology. real-time (anguage specification, and research into multimicroprocessor trends. We are keen t meet software specialists with sound experience in these areas who can contribute to our reputation and

Please write to or telephone Bill Hockey, Systems Manager, at Systems House, 87.61. High Street, Frimley, Surry GU 16 5HJ. Telephone: Camberley (0276) 63471

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Our Clients are the World's largest independent firm in information sciences and continue to grow at nal rate. They now employ over 8,400 personnel worldwide and had a turnover in excess of \$234 Million in their last financial year.

Services offered by the company include systems programming, application programs, requirements malysis and systems design, fucilities management, communications systems, systems engineering, software products, educational services, government and industrial systems and information network services.

we have been asked to identify suitable candidates to fill a number of vacancies for salesmen in Europe and the U.K. They will be selling the company's timesharing services, primarily for financial applications and as such, should have a good knowledge of the timesharing market-place in their particular country. Applicants should preferably be nationals and total fluency in the country's language is essential. We have been asked to identify suitable candidates to fill a number of vacancies for salesmen in

These are exciting and rewarding opportunities to join one of the fastest growing companies in the computer industry today. An excellent future is assured for any salesman who can show the ability to achieve targets and develop new accounts.

laterested applicants should telephone the Advising Consultant and interviews will be arranged in evant countries towards the end of October

Reference CW 310/1

HUTTON EXECUTIVE SELECTION LTD. HUTTON HOUSE, HUTTON STREET, LONDON EC4Y BHP.

(Office Hours) (Ansafone Service)



#### TIMESHARING — COMPUTER **BUREAU BRANCH MANAGERS**

FARNBOROUGH, HANTS -**FAREHAM, HANTS** SHEFFIELD, YORKS INCOME c £8,500 PLUS CAR

Our Clients are one of Europe's leading timesharing bureaux with more than a dozen offices throughout the U.K. where they currently employ some 250 people and have a turnover in excess of £3M p.a. They are committed to increasing their commercial systems business and are looking for three senior people to join their organisation and assume total revenue responsibility for new and existing business and for sales and support staff within their branches.

Candidates are likely to have the following qualifications:

A positive front-end sales background, ideally within the timesharing industry.

- \* A proven successful sales track record within this or a directly comparable environment.
- \* Capable of identifying new business areas, particularly within a commercial environment.
- \* Preferred age group 28-35.

#### **CUSTOMER CONSULTANTS BRISTOL AVON**

income c £5,500 plus car

in addition, they are looking for suitable candidates to fill important field customer support roles in the West Country. Candidates will probably have the following background:

- \* Programming or systems background in the timesharing industry.
- \* Able to communicate with customers in a sales environment.

\* Preferred age group 25-35. Customer consultants report directly to the branch managers and branch managers in turn to the regional manager. Branch managers will have responsibility for both sales and support personnel within their branches in addition to a direct field sales role. Career progression for successful candidates will be directly related to performance.

Applicants interested in these excellent opportunities should telephone the Advising Consultant quoting the appropriate reference number.

Reference CW 310/2

HUTTON EXECUTIVE SELECTION LTD. HUTTON HOUSE, HUTTON STREET, LONDON EC4Y 8HP.

01-353 6187 (Office Hours) 01-353 1436, (Ansafone Service)

## **PROGRAMMERS**

LONDON AND HOME COUNTIES

Salaries to £5,500

**REAL-TIME MINIS** 

ON-LINE MAINFRAME

Interesting opportunities exist for programmers with either COBOL or commercial ASSEMBLER level language experience who can demonstrate a high degree of self-motivation, user acceptance and proven or potential supervisory ability.

The likely candidate profile is as follows:

- \* At least eighteen months' relevant programming experience.
- \* A strong commercial awareness. A Degree or equivalent preferred.
- \* The ability to communicate effectively.
- \* The ability to accept responsibility quickly.

Candidates who feel they match the above specification are invited to contact the Advising Consultant to arrange immediate interviews. Please quote the relevant reference number:

HUTTON EXECUTIVE SELECTION LTD., HUTTON HOUSE, HUTTON STREET, LONDON EC4Y BHP.

#### FIELD SERVICE **ENGINEERS**

Salary to £4,500 plus allowances plus car

LONDON AND HOME COUNTIES

Our Clients are one of the world's leading manufacturers of computers including technically advanced stand-alone computers, mini-computers and teleprocessing systems. Due to continued expansion within the U.K., they are looking to recruit dynamic engineers responsible for maintaining equipment within London and the Home Counties.

The preferred candidate profile is as follows

- \* Proven experience in servicing computer systems
- \* Probably an HNC in Electronics or equivalent.

While these features are important, we believe that there is no substitute for practical experience.

Applicants must be confident in their own abilities and mere "board-swoppers" need not apply

Please contact the Advising Consultant quoting the appropriate reference number for further information regarding these excellent opportunities. Reference CW310/4

IUTTON EXECUTIVE SELECTION LID

SOFTWARE

**ENGINEER** 

TRAFFIC/

SYSTEMS

COMMUNI-

CATIONS

EXPERIENCE

Logica

growth

revenue

£million

#### TWO OUT OF SIX? CORAL If you can lick two (or more) of the boxes because you have relevant experience our client would want to talk to you. And, equally important, you would want to talk to him. MACRO

His need is for real-time systems & software engineers who are interested in working on advanced technology projects for the U.K. and export markets.

You would be interested in this field of work, are looking for a salary of between £3,500 to £5,500 p.a. now, want to join a company which can offer a variety of work and provide good working conditions in a particularly pleasant area. Further, you would like to talk to someone who won't keep you hanging about for weeks.

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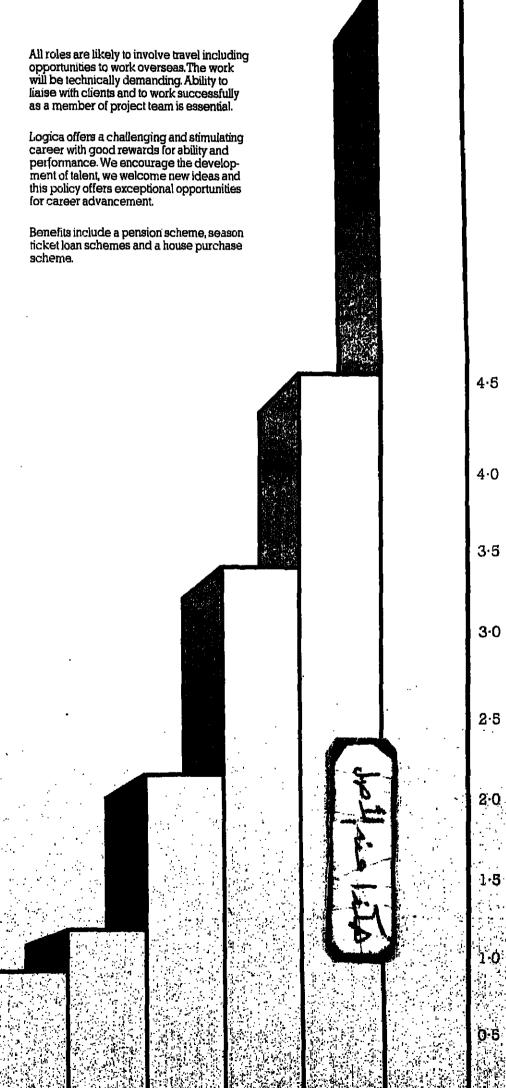
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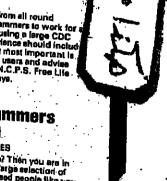
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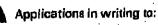
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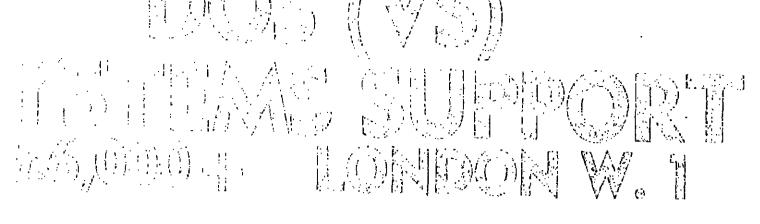
Our founder and Managing Director will be visiting London to interview prospective candidates. Enquiries from Australians interested in returning prospective candidates. Enquiries from Australians interested in returning home are also welcome. Send a brief resume (including a day and evening home No.) to Mr. H. Douglas C/o Bartlett Jeffress Advertising Ltd, phone No.) to Mr. H. Douglas C/o Bartlett Jeffress Advertising Ltd, 23/28 Fleet Street, London EC4Y INE, to arrive by November 7th.

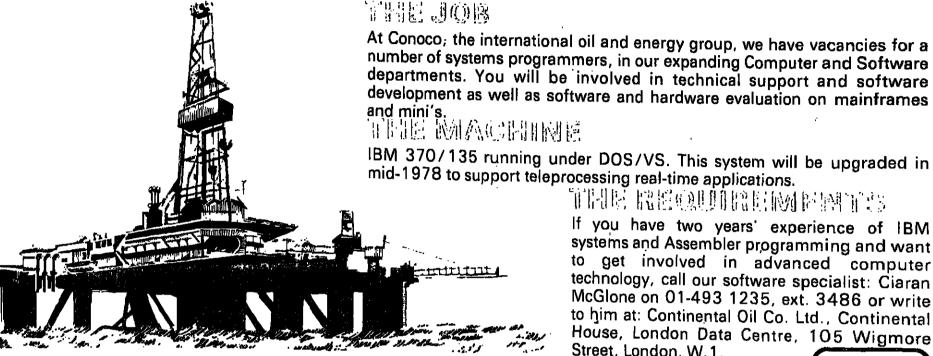


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number of systems programmers, in our expanding Computer and Software departments. You will be involved in technical support and software development as well as software and hardware evaluation on mainframes

IBM 370/135 running under DOS/VS. This system will be upgraded in mid-1978 to support teleprocessing real-time applications.

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ARBAT

# **Systems Programmers**

Central London c£5 1/2 k

To reconfigure and install operating systems software to meet special requirements and to develop and install SWIFT Interface utilities and special communications

Assembler level experience is essential, ideally with a knowledge of TP or message switching

ARBAT will give comprehensive training on their DEC PDP-11 in-house equipment plus usual company benefits.

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DEPUTY DIRECTOR .de वा: £8443-£7851 a year

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#### COMPUTER ROOM SUPERVISOR

Applications are invited for the position of Computer Room Supervisor at our Head Office, sited on Marylebone Road.

The successful applicant, who must have at least two years' relevant experience, must be capable of taking full esponsibility for all aspects of this operation.

Systems currently processed on our main frame con an RJE terminal are in the process of conversion, to be run on a recently installed C.A.I.; SYFA mini computer; with implementation scheduled for early 1978. At present only one shift is worked, although it is anticipated that this may be extended.

The position offers a good working environment; together with the normal range of large company fringe behefits. Selary is negotiable dependent on experience.

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### Computer Recruitment

A division of ATA Selection and Management Services, recruitment consultants to Industry and Commerce since 1962.

#### SERVICE ENGINEER **GLASGOW/EDINBURGH** c£6250 + CAR

DatagraphiX, a subsidiary of General Dynamics, require an experienced computer/electronics engineer to service their COM Installations in Central Scotland. Applicants must have the ability to work independently and maintain maximum utilisation of the equipment for customers.

Salary is made up of a basic to £4,250 + car, stnd-by allowance of over £2k, overtime, telephone, meal allowance + other large company benefits.

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#### **MIDLANDS OPPORTUNITIES** SYSTEMS ANALYST Kidderminster c£4500

for project work on general commercial systems, a minimum of 18 months' experience in COBOL/ASSEMBLER required. 'A' levels preferred.

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required for mini + mainframe installations, with a minimum of 12 months' experience of any of the following ASSEMBLER, PL1, CICS, Machine Code. Also JUNIOR PROGRAMMER c£3k, preferably Graduate.

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Aged 20730 for Honeywell series 60 installation, GOBOL essential, ASSEMBLER useful.

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Must have experience of ICL 1903/1905, both batch and on-line, operating 3 shift system. Applications are both technical and commercial.

For details of these and many other Midlands opportunities contact 021-843 1994, ATA Computer Recruitment, Woolworth Building, 102 New Street, Birmingham.

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Burroughs, best known for computer hardware and software, are leaders in this field of technology

Surroughs-UK is the largest member of the International Group

Sustained expansion and continuous internal promotion has created a need for new members of the sales teams

You must be self-motivated, ambitious and capable of adjusting to the personal and intellectual demands of a rapid career progression. Self-assurance is essential as

A programme of intensive and on-going training will provide you with the professional skills to express yourself through personal effort and the determination to

If you have a degree or equivalent with a systems or sales background, but find yourself not realising your full potential in your current employment, then you and Burrougha could achieve success together. Ring now for an initial interview or write to Caroline Bagley

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Ref CB 8000.

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ARE IMVITED TO JOIN US FOR WINE AND CHEESE

un monuay, 24th october, 1977

5 p.m. - 8 p.m. At vii House

A major communications company wish to recruit analysts and programmers to design and develop mini based systems

C andidates are likely to have experience of mini programming and could have progressed to analysis more recently

Members of the management team have agreed to attend informal discussions at our offices and suitable candidates are invited to attend.

Directions: Closest Underground Leicester Square, use Cranbourn Street exit, walk to end of Cranbourn Street (30 yards). VLI House situated opposite to the right

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SURREY UP TO £4500 + BENEFITS ARE YOU stready a Systems Programmer wanting new challenges and more responsibility:

OR HAVE YOU 6-24 months general computing experience and ambitions to move into software and data base wo

This medium sized company has large scale computing plans, and needs people like you, with a degree or good A levels to keep up the pace of new developments A 370/15B with VS1 and IMS already supports one of the most sophisticated on line data base systems in the country, and you will be offered excellent training and career opportunities as a member of this highly professional learn.

In addition to a good basic salary those are significant fringe banefits (such as free funches, bonus and mortgage scheme) flexible working hours in a pleasant semi-rural location, and good aports and social facilities SIR 3000.

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#### **PROGRAM IN DELIGHTFUL SUSSEX** SALARY—£ EXCELLENT

You will find more opportunity computer programming in pleasant CROWBOROUGH, Sussex, with Taylor Analytics is leader in the design, development and manufacture of equipment for exygen analysis and gas chromatography.

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#### PROCESS CONTROL IN BEDFORDSHIRE MINI ASSEMBLER To £5000

looking for Ideally, you will have gained your oxperience in a process or production control environ knowledge would certainly qualify

If you are ambitious, competent and keen to become actively involved in client lieison and systems hasitate to apply now.

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#### **MINI PROGRAMMERS**

Up to £5500

Initially you will be directly involved in specific assignments with DEC. Ventek and Data General based System

The company offers a substantial career path in the consultancy area of D.P. and a find the scope they need for advancement Ref. DG 1000.

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#### **IBM COBOL PROGRAMMER-SENIOR PROGRAMMER** HANTS/SURREY/SUSSEX BORDER to £5300

This is an opportunity for an experienced programmer to become an integral member of a small, triendly team, utilizing sophisticated systems in an on line environment. The company a current installation is an IBM 370/135 atthough upgrading is scheduled in the not too distant future.

You should be self-motivated and capable of working with the minimum of supervision. IBM COSOL experience is essential although candidates with knowledge of Assembler or RPG II would be of particular interest. In addition to career advancement our ctions also offers excellent remuneration and company benefits. Ref CB 4040.

Computer People

#### ARE YOU PREPARED TO BE SECURITY CONSCIOUS AND TRAVEL? c £5000 + Mortgage + Benefits

Programmers are required to join a leading bank in London to become part of the EDP Auditing Department. The main function of the successful candidate will be to produce software to monitor the Bank's many and varied computer systems both in London and throughout Europe, the Middle East and Africa.

Candidates should be of a mature disposition, and should have the ability to programme, using Cobol. They will be required to travel abroad for about 25% of the year, and their domestic lives should not make this impossible

This is an unusual opportunity to enter the financial world at a responsible level with ample opportunity development. A subsidised mortgage could be made available on top of a non-contributory pansion scheme, I leans and a generous travel allowance.

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ICL OPERATOR WITH DESIRE TO EXPAND SOFTWARE

KNOWLEDGE

NO SHIFTS C£3500

The successful applicant for this challenging post will have 2 years' ICL GEORGE II operating experience with a good knowledge of macro files.

The position will appeal to someone who would like to do less operating in order to be given substantial responsibility in Data Control plus the opportunity to LEARN and APPLY FILETAB.

Candidates from either sex would be welcome, although this is currently a predominantly female

COMPUTER CENTRE MANAGEMENT FILE CONTROLLER

**EDINBURGH £5.000** 

This prestigious group of companies based in Scotland is fully committed to the continuing advancement of their computing techniques. To this end they are currently installing a central Honeywell Level 66/20 facility to be utilised for online data-base and batch systems.

A lirst-class opportunity exists for a responsible person to take a senior role as File Controller in the computer operations department.

operations department.
The job involves responsibility for the day-to-day control and administration of all aspects of file allocation and data security. Additionally, the long-term planning of data management strategy will necessitate close liaison with the system development teams

Training will be provided and career prospects are excellent. Company benefits include non-contributory pension scheme and 4 weeks holiday. Relocation assistance is available.

Ref: KS 700

ICL OPERATOR £3,600 N. LONDON

A minimum of 1 year's experience on ICL 1900 range of equipment could lead you to our

client's modern computer centre where plans to run 2900 large range computers are

You would become one of a team of operators making a worthwhile contribution to the

#### SHIFT LEADER MIDDX/W. LON. CIRCA £4800 + 0/T

The Subsidiary of a large European company which is situated in West London, has a requirement for a Shift Leader.

Candidates should ideally possess 4 years 370/OS experience coupled with good knowledge of OS/VSI and its related J.C.L. Knowledge of DOS would also be an asset. Benefits are in line with most international companies.

Ref: NA 6892.

#### **OPERATIONS WITH A DIFFERENCE**

Are you interested in progress? Then you have no option but to read on! Our client has an installation comprising two complex 370 Machines with a unique software spooling system.

They require young operators with good knowledge of 370/OS to assist in enhancing

Salary would range between £3100-£3400, and benefits would be in line with large international companies.

Ref: NA 6052

#### DOS/VS POWER/VS ESSEX

If being domiciled in Essex and working in London is becoming tedious, this might be the opportunity you have been waiting for.

Our Client, an International Manufacturer, is currently looking for an operator with 12 months 370/125 experience.

If the idea of promotion into Programming or Systems analysis appeals to you, coupled with a salary around £3700 and additional benefits this could be the ideal post.

Ref: NA 5304

SOUTH LONDON DOS/VS

Operators with 12 months DOS/VS experience, there is an opportunity in a large financial organisation for you.

If you are ambitious, fast promotion within operations or progression into Programming or Systems is obtainable.

Starting salaries are negotiable between £3700-£4200, also a benefits package is available which includes a mortgage subsidy.

Ref: NA 5341.

# JUNIOR OPERATOR 2 SHIFTS £2600 S.W. LONDON

Perhaps to date your introduction to Data Processing has been limited to some Terminal Operating, and you now feel it is time to make the step into a MAINFRAME environment. Well, here's your opportunity to join a young UNIVAC 90/30 user.

- IT IS A COMPANY THAT'S RAPIDLY EXPANDING ITS BUSINESS SYSTEMS

Big company benefits exist.

Ref: KS 6094.

Interviews in Edinburgh, Manchester and London

continued success of this important expansion programme.

Ref: KS 6095

#### SENIOR OPERATOR IBM 05/VS1 £4.500 + PERKS - CITY

An American bank who are currently moving into new areas of data processing, requires a senior operator with 4 yrs OS/VS1 experience preferably on IBM 370/145. Job control language and IBM utilities are essential, however a candidate with the right technical aptitude will be given all the necessary training needed. Promotion and progression into programming, banking or technical support is posssible. Our client is also running two minis and training will be given in that area. Generous allowances are also given in-line with most banking environments.

SENIOR OPERATOR £3600-£4000 HERTS

A large financial organisation situated in cural Hertfordshire require a Senior Operator. Candidates should have a sound grounding of VSI coupled with the ability to move into a Man Management Role very shortly:

If you feel that you have leadership qualities but no acope to develop them, this is your opportunity to do so, Ref: NA 5450.

- IT COULD BE YOUR NEXT EMPLOYER

Ref: KS 5125

#### SCOPE + CHALLENGE = STIMULUS FOR ICL SENIOR OPERATOR £4,100 MIDDX

Responsible for the effective operation of the computer and shift, this is an interesting opportunity to work in a

Candidates for this post must have achieved a good work record from a GEORGE II environment over the past 2-3 years, and have the proven ability of supervising a shift.

It is envisaged that the successful applicant will be no younger than 23.

Ref: KS 6395.

#### ICL OPERATOR & £3700 OVERTINE AVAILABLE N. LONDON

Two operators with a professional and disciplined approach to their work are much sought for our client's established 2x1.904S installation

Qualifying applicants for these key positions should have a minimum of 18 months

thorough George II knowledge. This is a good opportunity to join a lerge organisation which offers security as well as the

opportunity to develop your carear Ref: KS 38601

#### **READING & LONDON**

The following vacancies are with a software house with units based in Reading and London, as well as in the North West. Although most of the vacancies will be based in the South, candidates with 2900 experience could be considered for future vacancies in the North.

#### 2900 SYSTEMS

to £8.000

There are a number of vacancies for 2900 experienced staff at all levels for Applications and

vare support programmers as well as systems analysts. All candidates must have a strong programming background and must be suited to work in a customer environment. We are equally interested in COBOL programmers and technical staff who have worked on software support and have experience of VME/8, VME/K or IDMS.

Systems applicants must be able to study and define systems requirements for large 2900 Users in order to design special systems. This will include proposal writing and implementation. Senior candidates should have been involved on the successful implementation of at least one project from design to installation. Ref. 673/CW.

#### **DP MANAGEMENT**

to £8,000

Candidates with technical experience in DP Management are invited to apply

The assignments will be based in the U.K. at customers' sites and will offer a variety of hardware as well as applications. We are looking for experienced personnel who have actively been involved in setting up at least one installation and have preferably worked on more than one type of hardware, including IBM, Burroughs, Univac, and ICt maintrames. They will have had a mixed background in Systems Programming as well as possibly operating

<u> - 6 6 6 7 6 7 </u>

To apply for any of the above positions or for further information, please talephone or write to Renee Nute and Sendy Lloyd on 01-242 9356. If it would be more convenient to telephone in the evening, the telephone numbers are: Ronee Nute, 01-874 6372;



#### Computer Programmer

Bostrom Division of UOP Limited is the world's leading manufacturer of suspension seating for the truck, tractor and industrial equipment markets.

and industrial equipment markets.

We are currently seeking an experienced programmer to join our small but expending D.P. Installation, which utilises an IBM System 3, Model 12.

The successful applicant will have a minimum of three years' programming experience, using RPG II, and will probably have worked in a manufacturing environment. Commoncing salary will be dependent upon age and experience, and the company offers a wide range of benefits, including 28 days' annual holiday and contributory pension schome with free life assurance benefit.



Mrs. P. Cowgill Personnel Officer **Bostrom Division** 

POST-DOCTORAL RESEARCH ASSIS-TANT

required to study complexity and com-plexity change of large programmes. Research experience easential familiarity with ALGOL, Burroughs systems including MCP and Com-piers, and Mathematical ability an attentiage Project has potential for fundamental breakthrough and requires indamentel brakkhrbugh and requiros nikativa end innovativa ability. Suc-essiul candidate will be based in Lon-lon but much work will be carried out in

Appointment intially for one year but renewet likely. Salary on Sculo £3,805-£6,077 personum plus super-

Apply to Profestor M . M. Lehman Department of Computing and Con-trol Imperial College of Science and Technology Lendon SW7 2PZ

# COMPUTER SYSTEMS **TEST ENGINEERS**

The Cable and Wireless Group is one of the leading telecommunications organizations in the world, embracing cable and radio systems, communications via satellite, telephone systems, computer and data handiing.

We are continuing to expand our activities in all areas of telecommunications, and require several Computer Systems Test Engineers to join our Development and Production Department. Responsibilities will include commissioning and system testing message switching systems using PDP8 mini-computers and Multiplex equipment manufactured in-house.

Qualifications and experience should include HNC in electronics or equivalent, at least two years mini-computer experience, and systems design experience. Although not essential, some software programming experience would be an

We offer excellent commencing salaries, and generous benefits including leave and pension arrangements and flexible working hours.

Please telephone or write for an application form to:

Miss Christine Morgan, Cable & Wireless Limited, 1 14 Great Suffolk Street, London SE1 0SG. Tel: 01-928 1901 ext. 236.

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# IF YOU HAVE THOUGHT OF MIGRATING TO AUSTRALIA, CONSIDER THE FOLLOWING.

CONTROL DATA AUSTRALIA has a solid record of achievement in the marketing of systems in the areas of education, scientific, wagering, government and manufacturing. In recent years, the Company has consistently achieved or exceeded all of its established sales targets. In addition, Control Data has its own Australian manufacturing facility. operates one of the country's largest and most comprehensive service bureaus, and is a leader in the marketing of advanced education and

CONTROL DATA AUSTRALIA requires people with expertise to work in the above mentioned areas. Vacancies exist in Melbourne and Sydney, and occasionally in Perth, Adelaide, Canberra and Brisbane. We do not intend recruiting in the United Kingdom in the near future but if you are thinking of migrating to Australia why not contact us for further information about our

- CONTROL DATA AUSTRALIA seeks experienced

   Commercial Analyst/Programmers (Cobol experience a must)
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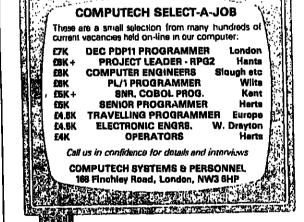
salary package with includes Company car or car allowance, superannuation, 4 weeks annual leave with a 17.5% leave loading, excellent working conditions and career opportunities.

If you are interested in applying for a position with CONTROL DATA AUSTRALIA please send your resume, including location preference in Australia, address and contact telephone number in U.K. to

Miss Sandra Beesley Manager, Recruitment and Selection

# CONTROL DATA AUSTRALIA PTY. LIMITED 598 St. Kilda Road, Melbourne, 3004. Telephone: (03) 51 0351.

CONTROL DATA



CITY OF BIRMINGHAM POLYTECHNIC

The following vacancios exist in the Computer Centre which operates an ICL 1902S (32K) running under GEORGE 2 and MAXIMOP.

£4239 to £4545 SYSTEMS ANALYST +£312 + 5% (Max. £208) Supplement

A person with substantial data processing experience is required. A good knowledge of programming is essential and experience in an educational environment

CHIEF PROGRAMMER £3825 to £4095 + £312 + 5% (max. £208) Supplement Required for Systems Analysis, Programming, etc. Applicants should have a high degree of motivation ability to work with the minimum of supervision, and be capable of supervising a small programming team. Salary rango £4239 + salary + £4095 + £312 + 5%

Further particulars and application forms (to be returned

by 4th November, 1977) from:
The Personnel Officer
City of Birmingham Polytechnic
F Block, Perry Barr
Birmingham B42 28U
Tel. 021-356 5911, Ext. 217

LIVERPOOL AREA HEALTH AUTHORITY (TEACHING)

## Liaison Officer

**Experimental Computer Project** 

Salary: £4,528-£5,503 per annum (Scale 9) inclusive of earning supplements

The basic function of this post is to form a communication bridge between the computer team and the staff concerned with the day-to-day management of health service functions and activities affected by the computer system.

The post offers valuable experience in both hospital management and information systems context and will be an appropriate post for career development in hospital Applicants should have wide experience in hospital

management and also a knowledge of computer systems.

Appropriate training will be provided. Application forms and job description are available from the Area Personnel Department, Orleans House, Edittund Street, Liverpool L3 9NG; telephone 227-4011, extension 34; Cideing date: 4th November, 1877

#### Systems Programmer (IBM 370/145)

AP3/4/5 - £3,234 rising to £4,407

This position is second in a team of 3 responsible for implementing and maintaining a variety of IBM and established operating software. The present 370/146 is to be replaced by operating software. The present 370/146 is to be replaced by operating software. The present 370/146 is to be replaced by operating software. The present 370/146 is to be replaced by operating software. The present and another under CICS. CMC network runs under CRJS and another under CICS. CMC Reality systems are planned early. In 1978, in three district councils which will operate online to the mainframe under RES. Applicants must have a sound knowledge of 05/751. JCl and BAL with a minimum of 3 years experience persons with their previous experience may be appointed at a salary other than the minimum.

Assistance will be given with removal expenses in secondaric Application forms available from The County, Treasuler

Crosing differ November 1 1th, 1877

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Kingston: 44 Wood Street, Kingston upon Thames, Surrey. lelephone 01-549 3212 (24hrs) Telex 27950 Maylok: 5-6 Yarmouth Place, Brick Street, London WIY 7DW. lelaphone 01-499 9214 Telex 27950

Dublin: Conberro House, 24 Lower Leeson Street, Dublin 2. Idephone 762170/762188/785692 Telex 30742 Ansterdam: Rivierstaete, Amsteldijk 166, Amsterdam 1010. Rephone 461844 Telex 11336

Computing Services Association

# Home

Our chent is a well established and dynamic company with a particular interest in specialists who can contribute to the growth of a department which already has an excellent reputation in the field of Operating Systems on ICL mainframes.

They are looking for people whose long term camer objective is in the field of large Operating Systems and have already had experience in programming/supporting one of the following:-GEORGE 3, VME/B, VME/K.

Excellent training will be given on 2900 facilities where necessary and successful applicants will be expected to assist with new developments, implement complete systems, analyse performance and tune the operating systems as well as to provide consultancy service to computer users, management and staff

**Senior Operating Systems Consultant** £6500-£8500 **Operating Systems** Consultant £5500-£7500

There are plenty of opportunities to travel both in the U.K. and overseas. An assistance with relocation will be given where appropriate. Ring Stella Mitchell immediately for discussions.

CW42/1 KINGSTON

# Sales **Executive Dublin** £12000 plus

COMILO I TIV ALTERIA

on reaching reasonable target relocation expenses high guarantee

We have been retained by a leading International Manufacturer of medium to small computers and terminals to recruit a successful Sales Executive to sell their successful new range of hardware.

The successful candidate will have a proven track record in sales, preferably in the mini and terminal markets.

The job will have a realistic quota which, coupled with a high base salary, means exceptional rewards are possible. Relocation expenses will be covered in an excellent fringe benefits package.

Ring Gerald Delamere

CW42/2 DUBLIN

# COBOL **Programmers** in the West End

One of the most interesting and rewarding openings for mainframe programmers in recent years has arisen.

A major international company is on the threshold of a five-year development programme and wishes to recruit the first phase of its programming intake.

Already an existing IBM user, they will have to upgrade their 370 to cope with their Data base, Real time, and Distributed Processing systems development.

This ground floor opportunity is open to applicants with a proven record of Cobol programming on any machine. Successful candidates will enjoy the benefits of working for a company. which include a competitive salary technical training, career progression into analysis and management in ... addition to probable overseas travel. To secure an interview, please telephone 01-499 921 4 and speak to Clive Hartrup.

CW42/3 MAYFAIR

# **Future Systems**

A team of highly technical PROGRAMMERS and CONSULTANTS is currently being sought by a large and very progressive software house. The work will stretch right across the board from development of micro based software, compilers to interactive distributive processing software and message switching to advanced applications on a variety of machines.

# **Programmers** £5000-£6000

This is a rare opportunity for PROGRAMMERS and DESIGNERS with experience of any of the above fields who have also had at least one years' assembler experience to join at the very early stages of development and be involved with the initial design plans. ENGINEERS with micro processing background will also be considered.

# Consultants £6000-£7000

CONSULTANTS who are still highly technical and have had experience with more than one range of machines, minis, or communications are urgently required. Unique opportunities also exist In ah advanced micro processor-linked project.

Relocation expenses will be met where it is necessary to move to Berkshire. The company offers attractive terms, conditions and individual career prospects as well as possibilities for overseas travél: Please ring Stella Mitchell for a confidential discussion

CW42/4 KINGSTON

## Looking to the future? We are!

Hambro Life started six years ago in 1971 – so did our computer systems. Both have expanded at an astonishing rate and we are now developing our systems to cope with the next six years.

Examples of our current projects are:

- an in-depth study of our database needs
- the evaluation of extending our on-line updating facilities
- the investigation of on-line programming techniques

Our major production systems are run in batch mode and are written in PL/I. We are, however, carefully introducing new on-line systems as the business requirements change to enable us to provide a complete service to our users.

Our installation consists of an IBM 370/145 and a 370/148 is to

We are looking for four young highly competent

- have 2+ years sound commercial background
- are strongly motivated to succeed and to meet difficult
- are willing, if necessary, to retrain in PL/I

Hambro Life is a vigorous, growth company, heavily dependent on computer systems, and provides the opportunities for career development to be in line with individual achievement. Progress within the Company is purely dependent on ability and salaries extend to £7000 for programmers who prove their

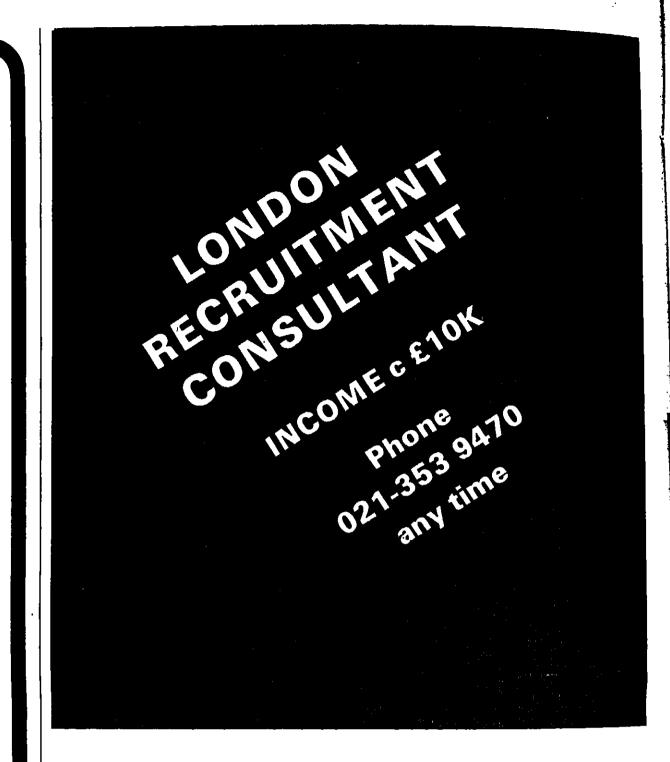
Fringe benefits include a generous disturbance allowance, relocation expenses to rural Wiltshire, free life assurance, non-contributory pension scheme, free membership of BUPA and a share option scheme.

#### For our comprehensive booklet contact

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(24 hours service; reverse charges during office hours)





CONTRACT PROGRAMMER

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CONTRACT PROGRAMMERS NORTH ENGLAND

COMPEX

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Components Ltd. Abercynon, Glamorgan.

COMPUTER DEVELOPMENTS

If moving into the manufacturing industry, embarking on a new phase of development excites you, then you should join

us. We are recruiting for a number of positions in systems and programming in preparation for the installation of a new computer and its associated communications network of terminals in the Summer of 1978.

#### SYSTEMS STAFF

A SENIOR ANALYST is required to be responsible for our manufacturing systems. Previous experience in on-line processing is desirable, but experience in a manufacturing

2. A number of support SYSTEMS ANALYSTS to work either in the manufacturing areas, or on financial system:

Applicants must be self motivated and capable of taking the responsibility for a particular application.

#### **PROGRAMMING** STAFF

3. A CHIEF PROGRAMMER is required to supervise and lead a small team of programmers. Experience of teleprocessing is highly desirable.

4. Vacancies also exist for programmers at different levels.

One position will be of interest to a person with expertise in NEAT-3. Preference will be given to candidates with expertise in COBOL, TPS and Applications Manager. Salary will be in accordance with experience and position. Assistance with relocation expenses will be given where

Write or telephone for an application form to? Staff Personnel Officer Abercypon (0443) 740331

# datascene

#### MINI PEOPLE £3500-£6500 London and Home Counties

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RW 42/2

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A major British software house is expanding its business in the area of small business systems implementation and software. This is a rapidly expanding area of business, and the company's continued growth will be constrained only by their ability to undertake and staff projects with

As a result, the company now wishes to recruit staff for their Small Business Systems Division. They will support commercial clients who plan to implement small mainframe computers for general business applications, using RPGII and COBOL as the main programming languages. Analyst/Programmers are responsible for systems design for the client, and prepare detailed programming specifications. They are expected to ensure the successful completion of projects to the client's entire satisfaction and according to agreed timescales. They will also supervise Programmers on clients' projects,

The company is one of the leading UK systems houses, established nearly ten years ago. It is backed by a substantial industrial organisation and is therefore well placed to take advantage of an expanding market. Most of its work has been UK based but it is now looking for a growing proportion of its work to come from Western Europe.

Candidates who have not worked with RPGII or COBOL, but who otherwise meet the requirements of the job should not be deterred from applying as training can be provided.

This is an excellent environment in which to develop your creative abilities and to make a meaningful contribution to the furtherance of

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RW'42/4

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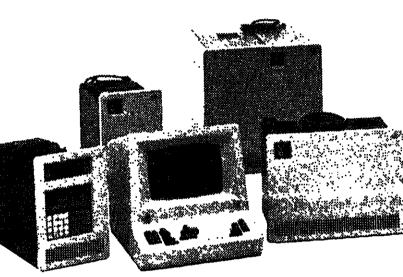
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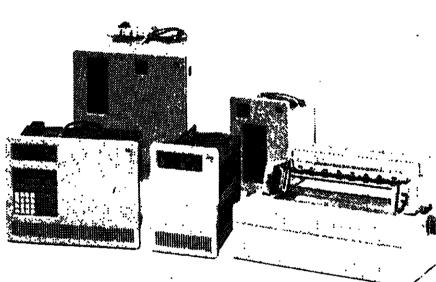
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Computer, a 192K I.C.I

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Bramhall, Stockport, but this job may take you on lengthy assignments elsewhere e.g. North Wales or North Lencashire You will be part of service to power stations, using both the 1903T and their own equipment (Ferrent, G.E.C., Pour should have had considerable Operating Systems, Direct Date 2015. the station lisison team providing a com Operating Systems, Direct Data entry and anquiry systems and be capabli of designing, specifying and implementing small systems.

knowlege of real time logging and con oplications would be an advantage.

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S.E. HERTS

£6000

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CITY

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A London based financial organisation with branches throughout the world is seeking a person with in-depth knowledge of IBM System 32 issues

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interviews with selected applicants will be held in London shortly.



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A major consumer organisation with its DP Operation based in a pleasant area on the HERTS/ESSEX BORDER is currently looking for a Senior Systems Analyst to fulfill a Project Leader function. The successful person will have solid commercial analysis experience with a good knowledge of on-line or distributed processing investigation. He or she will be responsible for a team of analysts and programmers and will be expected to work largely on his own initiative.

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If you have a minimum of 3 years' design and programming experience on engine simulation and flight systems with a solid grounding in PDP 11/45 ASSEMBLER, then this is your chance to see a bit of the world at someone else's expense. You will be based in the States for at least six months, with all expenses paid and a flat provided, after which, there will be an excellent position available in the U.K. should you

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to £5,500 p.a. If you are an experienced COBOL Programmer you have never been more in demand than you are at

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Remember, this is only a SMALL selection, so if none of the above quite fit the bill for you give me a call anyway to see what else is going.

**CONTRACT PROGRAMMERS** 

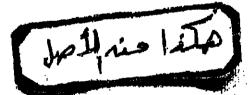
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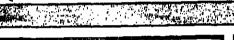
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BOROUGH OF HYNDBURN Borough Treasurer's Department

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which are to be installed on IBM System 32 and 34 computers in overseas branches of L.B.I. The work will be carried out in London but opportunities for overseas travel Ideally candidates will be in their mid-twenties, be well educated, probably to at least 'A' level standard and should have had at least four years'experience either as a

programmer or analyst/programmer preferably using IBM System 3 or 32 computers The starting salary will reflect age and experience but it is unlikely that anyone currently earning less than £4500 would have the desired qualifications and experience. The position offers very good career prospects.

Interested applicants should write or telephone, stating qualifications and experience, to Simon Wootton, 01-248 9822, Ext 338

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We are part of an International Organisation using an IBM:System/3 Model 10 which will be upgraded to a large Model 8 with teleprocessing later this year.
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# THE SALES

# Watch your tongue

TRAVELLING AND DIN ING with colleagues and clients often presents an excellent opportunity for discussing important busi-ness matters. Perhaps the implications of the new equipment you are about to install; the opening of a new branch office; the highlights of your prospect portfolio; or the details of an impor-

tant proposal. Unfortunately, whether travelling first or second class, dining at the Ritz or Joe's Caff, there is no way of assessing whether you are in the company of disinterested bystanders or ascinated competitors.

Several years ago a friend of mine, and a significant personality within the his-Besic c£5k on target £8k tory of the UK computer industry, needed to buy air conditioning equipment for a substantial installation.

prestige car London During the journey to London my friend was intrigued to overhear the comm + prestige car conversation of two men SALES SUPPORT who were leaning over a Mini computers c£5k large blueprint on the table Home Counties. opposite.
They were discussing For further details

their tactics for a forthcom ing meeting. What they would say when they arrived, who would handle what aspects of the conversation, their opening and bottom prices, making such remarks as "We'd helter not mention that" and "That's

not as good as it might be." Later that day my friend saw the first of the contenders for the new air conditioning equipment, and who should be their representatives but --- you guessed it - the two men on the train! Right, and you guessed it again! They didn't get the

The implications of havne business conversations verheard are fairly obvious; yet people continue to do it, both senior and unior personnel alike, even hough such carelessness could easily result in the loss of a forthcoming sale or

an existing client. So, if you must discuss your business publicly, keep it quiet, use no proper names of companies, products or personalities, and make it brief.

Conversely, if you are travelling or dining alone just listen to the world around you. The loose talk of other people is fair game.

And next time you visit the pub with the lads from the office; just think about all those clients, potential clients, competitors, journalists, recruiting agents, government officials and divorce detectives who might be in there with you.

Trader

Puzzle answer

GIVEN one side x of a right-angled triangle, and the difference d between second side and hypotenuse, then

1 /11 2d 1 2 equals Length of Hypote-nuse This makes AC 25.5 in

our particular case. 

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